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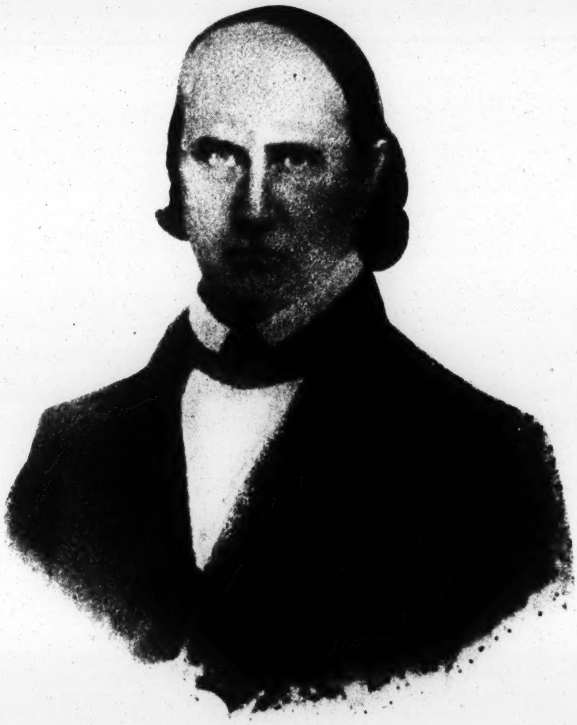

THOMAS HOLLEY CHIVERS
[[1809-1858]]

[From Schurigio: Lithologia Historico-Medica, Dresden, 1744.]

ANNALS OF MEDICAL HISTORY

New Series, Volume VI May, 1934 Number 3

NOTES ON THE HISTORY OF MEDICAL COSTUME*

By W. J. BISHOP

London, England

THE subject of medical costume would appear to be so extensive as to require for its adequate presentation a treatise ("historical-descriptive and philosophical-speculative") as remarkable as that of the late Diogenes Teufelsdrockh. It is much to be regretted, therefore, that the philosopher of Weissnichtwo has not left so much as a chapter on Dress and the Doctor, and that while many medical men have written on dress, particularly on its hygienic aspect, and have waxed lyrical over such themes as the Tyranny of the Collar, very few have paid any attention to the costume of their predecessors.[1]

In pursuing the study of this subject little help is to be had from the innumerable "histories" of costume. The most profitable sources of information are: painted and engraved portraits and caricatures, on the one hand, and general literature, especially poetry and plays, on the other.

In this paper it is intended to give some account of the general features of medical costume throughout the ages, and to append short notes on such subjects as academic dress, the physician's cane, pomanders, wigs, and the various prophylactic garbs that have been worn in times of pestilence.

There is abundant evidence to show that the costume of the physician in the past has been, generally speaking, of such a distinctive character as to proclaim its wearer as a follower of the healing art. This peculiarity of costume dates back to the time when the roles of the magician, of the priest, and of the physician were united.

According to Sir James Frazer, "magicians and medicine men appear to constitute the oldest artificial or professional class in the evolution of society."[2] Their task was to combat the machinations of the disease-demons, etc., all diseases and disorders being attributed to the malevolence of evil spirits.[3]

---

* From the Library of the Royal College of Physicians of London.

It is obvious that the doctor will the better deceive his antagonist if he disguises his identity as a man. Consequently he dons robes and adornments of the most imposing design. His face is covered with a hideous mask, his body with a large and flowing mantle, figured with cryptic symbols and devices, or composed of animal skins. Around his neck are hung necklaces heavy with a grotesque collection of bones, magical plants, and amulets generally. In one hand he carries a rattle, drum or tambourine, in the other he brandishes a spear. Although every article worn by the medicine-man has, like the robes donned by priests in religious ceremony, come to possess its own mystic significance in relation to demonology, it is probable that the origin of the professional garb was simply the idea of disguise, adopted out of fear of the spirits. There can be no doubt, however, that the medicine-man, in his panoply of mask, robes, and rattle, must have inspired his patient with a comforting assurance of the power of medicine.[4]

Among the American Indians the medicine-man, who combined the functions of councillor, prophet, priest and physician, usually wore a distinctive form of dress when carrying out his ritual.

The ceremonial dress was extremely variable, depending on the symbolism required of the costume. They ran the gamut from the extremely ridiculous to the most beautiful examples of Indian artistry still extant. Many wore their ordinary costume enhanced by some charm or amulet.

Medicine masks, hats, staffs, wands and spears were common accessories. Stone[5] gives a long description of the "medicine-hat" worn by the Apache medicine-man, Nan-ta-do-task, and of a medical necklace worn by High Wolf, a Cheyenne medicine-man. This necklace consisted of a buckskin collar, to which were attached two pouches made of human scrota containing medicines, eight forefingers of hostile warriors whom he had killed, and five arrows which had been shot into his body by the enemy.

The earliest known physicians, those of ancient Egypt, were also magicians and priests, and as such naturally wore a special costume. Thanks to the numerous statuettes of the Egyptian Imhotep (born *ca.* 3000 B.C.) that have been discovered it is possible to gain some idea of the appearance of the "first figure of a physician to stand out clearly from the mists of antiquity" (Osler).

> The costume worn is usually that of a priest, a finely pleated apron hanging down over the knees and legs; at other times the latter are bare. . . . A closely fitted cap usually covers the head, although in other cases this is bald. A handsome necklace with four or more rows of beads is worn in many instances; occasionally a pectoral is suspended by a cord.[6]

It might almost be said that the costume of the ancient Egyptian physician was chiefly conspicuous by its absence.

The costume of the Greeks, like that of the Egyptians, was simple and did not allow much scope for differentiation. It usually consisted of two pieces: the chiton, undergarment or tunic, and the himation or cloak. The chiton resembled a loose shirt with short sleeves; it was held at the waist by a girdle and reached to a little above the knees. It is probable that the priest-physicians (Asclepiadae) and others engaged in peaceful pursuits wore a long chiton, reaching to the ankles. The himation or cloak consisted of a large oblong piece of material which could be wrapped about the body in various ways. It was a cumbersome garment and was usually laid aside when hard work had to be done. Sandals or shoes were usually worn out of doors, although it was probably the custom to go barefoot indoors. Many philosophers, notably Socrates, and others who affected a simple life were in the habit of going unshod.[7]

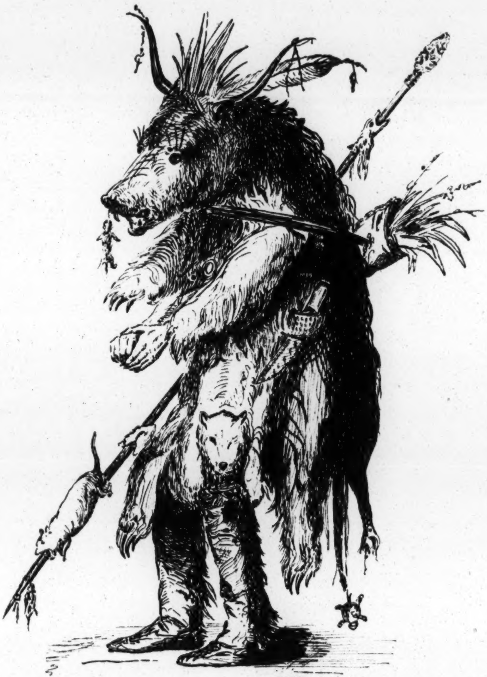

FIG. 1. BLACKFOOT MEDICINE-MAN. (FROM STONE,[5] AFTER CATLIN.)

According to C. L. Dana,[8] who has paid some attention to the subject, Greek physicians, apart from the Asclepiadae, had no special costume. Nevertheless it appears from a few references in the poets that they draped their cloaks about the body in a peculiar way and that there was an orthodox method of tucking up the clothes before dressing a wound or performing an operation.[9] Thus Virgil says of the physician Japis:

> The aged leech his garment wound
> In Paeon sort his shoulder round.

We read in Statius:

> In leeches fashion both arranged their dress.

And in Silius:

> Now when he brought those gifts divine,
> In haste (as custom was) his garments round
> Tuck'd up, with water first he purged the
> wound
> From blood.

It is probable that physicians carried a staff. Canes and staffs were in common use amongst the Athenians, and the staff with the entwined snake always accompanies the statue of Aesculapius.

Before leaving the subject of ancient medical costume it may be mentioned that advice on dress is expressly given in two of the ethical tracts of the Hippocratic Collection. In "Decorum" it is laid down that the physician should be in "dress decorous and simple, not over-elaborated, but aiming rather at good repute, and adapted for contemplation, introspection and walking." The author of "Physician" goes further: "The dignity of a physician requires that he should look healthy. . . . Then he must be clean in person, well dressed, and anointed with sweet-smelling unguents that are not in any way suspicious."[10]

When the practice of medicine eventually separated to some extent from magic and religion and a profession of medicine came into being, its followers retained those artifices of costume that were calculated to impress the imagination.

During the Middle Ages the callings of the priest and of the physician were reunited, and the practice of medicine in its higher branches was almost entirely in the hands of ecclesiastics. At a time when most regular physicians belonged to the church, medicine was naturally subjected to ecclesiastical influence; and with the foundation of the universities and the introduction of academic costume, which was itself clerical in origin, medical dress received a further access of pomp and dignity. In the oldest miniatures it is always a cleric who is represented attending the sick bed.

Towards the end of the twelfth century the clerical habit began to give way to a recognized medical costume. Physicians of this period are usually represented in a long robe with a cowl, the head covered with a cap, and holding gloves in the left hand. The masters of the famous School of Salerno (11–12th cent.), who gave very precise instructions for the conduct of medical practice, said that a physician should be well dressed and argued (on the principle that to him that hath shall be given) that if he were poorly dressed he would receive poor fees.

> Vêtu d'habits décents, affable et plein de zèle,
> Le médecin s'empresse à la voix qui l'appelle.
> D'un rubis l'étincelle à son doigt brillera,
> Sur un coursier fidèle en visite il ira.
> Ce splendide attirail rehausse son mérite;
> Sur l'esprit du malade il réussit plus vite,
> Reçoit cadeaux sans nombre; un mince accoutrement
> Lui vaudrait profit mince et sec remerciement.[11]

A twelfth century manuscript of Hippocrates preserved amongst the Sloane MSS contains a fine representation of a medical practitioner of the period. He wears a hood of a peculiar form; a long gown reaching to his feet, over which is a tunic confined by a girdle at the waist; a mantle fastened on the right shoulder, as was customary, leaves that arm free, and envelopes the whole body. The beard appears to have been shaved or at least trimmed very close.[12]

Petrarch (1304–1374) inveighed against the luxurious attire of physicians. In his day

> . . . it was customary for physicians to appear in public with all the splendour and magnificence which social gradation and affluence could provoke. Their attire consisted of royal scarlet, plenteously embellished with priceless gems or rings, finished with gilded spurs.[13]

The costume of the mediaeval surgeon was much simpler than that of the physician. We can obtain a good idea of its early form from the portrait of John Arderne, surgeon of Newark (1307–1380?), given in a fifteenth century manuscript of his "*Praxis Medica,*" and reproduced in colour by Sir D'Arcy Power.[14]

John Arderne has left us some interesting advice on medical costume in his observations "Of ye manere of ye leche":

> Also dispose a leech him that in clothes and other apparelings he be honest, not likening himself in appareling or bearing to minstrals, but in clothing and bearing observe he the manner of clerks. For why, it seemeth any discreet many clad with clerk's clothing for to occupy gentleman's boards. Have the leech also clean hands and well shapen nails and cleansed from all blackness and filth.[15]

Chaucer's Doctour of Phisyck (14th cent.) was a splendid figure. Fortunately there is a picture of him in the famous Ellesmere MS of the "*Canterbury Tales,*" which is adorned with miniature portraits of the pilgrims.

> In sanguin and in pers he clad was al,
> Lined with taffata and with sendal.

That is to say he wore a long gown and hood of a blood red color edged with a blueish grey. Taffata (modern taffeta) was a sort of thin silk; sendal a rich thin silk used for lining and highly prized.[16]

In the "*Testament of Cresseid*" of the Scottish poet Robert Henryson, a disciple of Chaucer, we read of a

> Doctour in phisick, clad in scarlet gown,
> And furrit weill, as sic ane aucht to be.

Chaucer's contemporary William Langland, in his "Piers Plowman," is very hard on the doctors. Hunger says to Piers Plowman:

> And if you be a man of power Piers, I counsel thee,
> To all that cry at thy gate for food for love of God,
> Give them of thy bread, thy pottage and thy sauce,
> Give them of thy loaf, yea, though thou have less to chew. . . .
> If thus thou diet thee I will wager both mine ears
> Physick shall sell his furred hood to get him food withal,
> And shall pawn for his dinner his Italian cloak
> And be fain to let his physick go and labour with his hands,
> For many doctors be murderers (God mend them)
> And men die through their drinks ere destiny would have it.

From these references it will be seen that fur was a very prominent feature of the doctor's costume; and it remained so until well on into the sixteenth century, as is evidenced by numerous portraits.

Dorothy Hartley in her "Mediaeval Costume and Life" gives several illustrations of surgeons from manuscripts of the thirteenth and fourteenth centuries.[17] Their costume consists of a gown, cap, apron, leather wallet, and a cloak. The upper gown, or garde-corps, is slit on the upper arm to free the arm below, which in cold weather could be muffled in its ample folds. Surgeons are usually depicted wearing a curious close linen coif, a headdress once universally worn, but from the latter part of the fourteenth century increasingly restricted to the professional classes. Some surgeons wear close caps which bear a striking resemblance to the Basque berets so popular at the present day, even to the little stalk on top.

Dr. Charles Singer, in an article on some thirteenth century miniatures illustrating medical practice, has several figures showing the head-dress of the mediaeval surgeon.[18] They wear the characteristic head-dress fastened under the chin, with the flaps turned up. A physician is depicted wearing a long gown, ungirded, with a hood or cowl on the shoulders, and a cap. In one picture he is riding on a horse and holds gloves in his left hand.

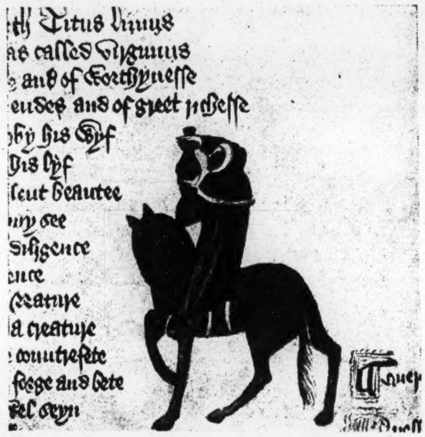

FIG. 2. CHAUCER'S DOCTOUR OF PHISYCK (14TH CENT.) (FROM THE CHAUCER SOCIETY'S EDITION OF THE ELLESMERE MS.)

The surgeon represented in the miniatures of the Bristol Guy de Chauliac manuscript, also described by Dr. Singer, wears a curious head-dress. It is a flat circular hat with a kind of shade or fringe hanging in folds at the back and sides.[19]

The costume of the mediaeval physician is here illustrated by a picture of the interior of a doctor's study from a French manuscript written about the middle of the fifteenth century (Jean Corbechon, Libre des Propriétés des Choses, Royal MS.15 E 11,Brit.Mus.). The physicians wear close dark caps with a narrow edge, furred capes, long dark gowns edged with fur, which are held up in walking. The gowns are not drawn in at the waist, but hang loosely from the shoulders to the ground, the long and ample draperies affording an outward semblance of great gravity.[20]

Thomas Linacre, the learned founder of the College of Physicians (1518), who was physician to Henry VIII, wore a special livery when in attendance upon his royal master, and received £12-10-0 quarterly for his services. He is described by his friend and contemporary George Lilly as being conspicuous among the chief persons of the court in a purple robe and a hood of black silk.[21]

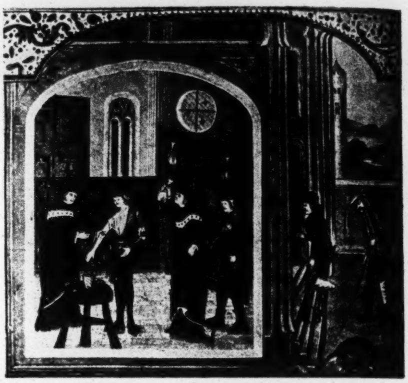

FIG. 3. MEDIAEVAL PHYSICIANS AND PATIENTS. (FROM CHOLMELEY.[72])

His usual dress is well shown in the fine statue by Weekes in the portico of the College of Physicians and in the portrait by W. Miller (copied from one by Quintin Matsys) which hangs in the Censors' Room of the College. He has the appearance of a refined scholar, and bears a striking resemblance to his friend Erasmus.

We see good representations of the sixteenth century physician in the portraits of Dr. John Chambre, Dr. John Caius and Sir William Butts. Dr. Chambre, in his portrait by Holbein, is wearing a fur-lined gown and the usual type of hat; he has a gold chain round his neck, and gloves in his hand. Dr. Caius is similarly attired in cap and gown, with a double chain, and is also holding a glove. Sir William Butts is also wearing the chain, which was probably a mark of distinction peculiar to those holding official appointments at court and certain other privileged persons. It will be noticed that all these physicians are clean shaven.

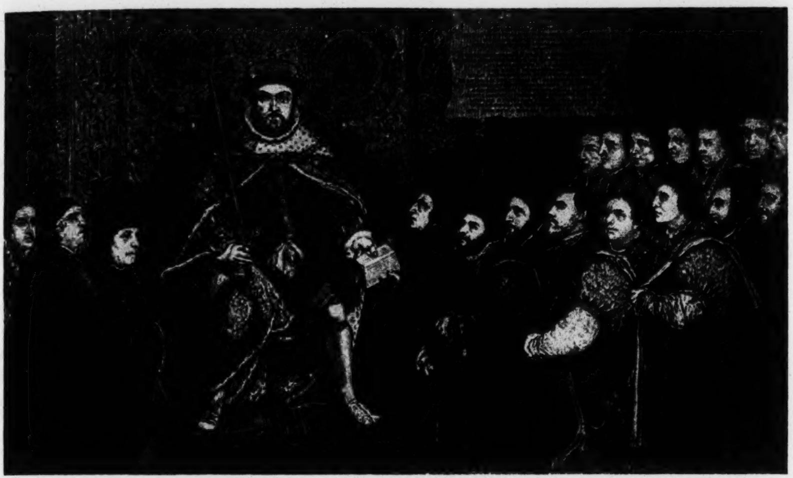

FIG. 4. HENRY VIII AND THE BARBER-SURGEONS. (FROM THE ENGRAVING BY B. BARON, AFTER THE PAINTING BY HOLBEIN.)

There is a great deal of truth in Carlyle's dictum that "Society is founded upon Clothes." From very early times sumptuary laws have been passed by the ruling powers in various countries to regulate dress, particularly that of the middle and lower classes. In England several such laws were made, but they do not appear to have been very rigorously enforced. It is interesting to find that the physicians to the King and Queen and all university graduates were specially exempted from the provisions of the Statutes 7 Henry VIII, cap. vi and 24 Henry VIII, cap. 13, which restricted the use of velvet and certain kinds of fur to the nobility and a few other privileged classes.[22]

The best representation of the costume and appearance of the sixteenth century physician and surgeon is given in the celebrated picture by Hans Holbein in Barber-Surgeons Hall, London. This superb picture is often erroneously described as representing Henry VIII granting a Charter to the Barber-Surgeons. Actually it was painted to commemorate the union of the Barbers' Company with the Guild of Surgeons in 1540. It was probably painted during the mastership of Thomas Vicary (d. 1561), who is shown receiving the supposed Charter from the King. The first figure on the King's right is Dr. John Chambre, who is in a skull-cap and furred gown, his hands wrapped in the capacious sleeves. Next to him is Dr. William Butts, who wears a similar dress with the addition of a gold chain round his neck. The third man is Thomas Alsop, the Royal apothecary. He has no head-dress, and does not look too prepossessing. On the King's left are fifteen surgeons and barbers on their knees, and in livery gowns, specially sumptuous for the occasion, being of brocaded or damask silk, trimmed with fur; each man wears a livery hood of red and black upon his shoulders.

First on the King's left is Thomas Vicary, Serjeant-Surgeon, who wears a gold chain. Next him is Sir John Aylif, Surgeon to the King, also with a gold chain and a ring on his finger. Then comes Nicholas Simpson, King's Barber, who, like Vicary and Aylif, wears a skull cap. The members of the Guild of Surgeons had from time immemorial claimed the right to wear a cap and call themselves Master or "Magister." Edmund Harman, King's Barber, the next figure, is the first person without a cap or hood on his head, signifying that he held no degree in medicine and that he was not a member of the Guild of Surgeons. He wears, however, his livery hood and gown as a member of the Court of Assistants of the Barbers' Company, trimmed with fur, and has a chain round his neck.[23]

Another fine representation of the surgeon's costume is afforded by the well-known picture of John Banester delivering the Visceral Lecture at Barber-Surgeons Hall, in 1581.[24]

The Annals of the Barber-Surgeons' Company contain many interesting references to costume. Great importance was attached to the livery, and members were liable to severe penalties for any defect in their dress. Entries such as the following are frequently met with:

> 8 Oct. 1607. Ordered by the Court of the Company that no Liveryman should attend in his lyvery and without a ruffe band uppon payne of xii d. for every offence.
>
> 1 Dec. 1607. This daye Thomas Allen & James Mullins were fined for waeringe of falleigne bands with their livery gowns.
>
> 21 July 1608. This daye it was thought fit that the pvt Assistants should sit in Court without their gowns for that the weather is hot.[25]

A very curious act was the prohibition of long beards. Henry VIII had set the example of wearing his hair and beard short, and actually passed "An Acte agaynst Bearded Men." The City followed him in discountenancing long beards and penalized wearers of such.

By a regulation of 1556 Barber-Surgeons' apprentices were not allowed to wear beards, and their masters had to pay 6s.8d. for every infringement.[26]

Andrew Boorde (1490–1549), traveller and physician and author of "The Breviarie of Healthe," had a great antipathy to beards and wrote a treatise against them.[27] He has also left some interesting remarks on clothing.

On special occasions, such as the services at St. Paul's on Christmas and Candlemass Days, the Lord Mayor's Processions, Civic Pageants, etc., the Livery Companies of old London turned out in all their splendor. At such times certain of the Barber-Surgeons would ride on horseback with velvet coats and chains of gold about their necks.

The following anecdote related in Strype's edition of Stowe's "Survey of London" throws an interesting sidelight upon costume, and reveals a scandal that no doubt disturbed the medical circles of London at the time:

> In the year 1563, Dr. Langton, a physician, rid in a car, with a gown of damask, lined with velvet, and a coat of velvet, and a cap of the same (such it seems doctors then wore), but having a blue hood pinned over his cap; which was

(it seems) a customary mark of guilt. And so came through Cheapside on a market day. His crime was that he was taken in bed with two young wenches at once.[28]

In the sixteenth century many physicians affected great magnificence of costume. Paracelsus (1493–1541), the ardent reformer, inveighed against this excess.

> I praise the Spagyric (chemical) physicians, for they do not consort with loafers or go about gorgeous with satins, silks and velvets, gold rings on their fingers, silver daggers hanging at their sides, and white gloves on their hands, but they tend their work at the fire patiently day and night.

During the Stuart period in England medical men were not distinguished by any great peculiarity of costume, the graver cut and color of their dresses being, with their gold-headed canes, their chief mark of distinction. They adopted a very grave costume previous to the Restoration. Fairholt gives an illustration of medical costume taken from the title-page of a rare satirical pamphlet of 1641, entitled "A Dreame or Newes from Hell, with a relation of the Great God Pluto suddenly falling sick by reason of this present Parliament." In this the Devil is depicted ill in bed, with a wrought nightcap upon his head, and a fire beneath his bed, attended by three physicians.

> One wears a close cap; the other a puritanical-looking hat; the latter gentleman is dressed, or rather enveloped, in a loose gown, gathered round the neck, and thence flowing to the feet as unconfined as a poet's fancy. His collar and cuffs are scrupulously plain; his beard and moustachios are trimmed in the fashion immortalized by Charles I's adoption. His companion's face is similarly decorated, though the upturned moustachios give him rather a military expression, as if the amputation of a limb would in no wise concern him. His ruff is closely plaited, and so are his ruffles; his wide open gown displays the doublet and long dress beneath; and, altogether, he looks a fit precursor to the undertaker.[29]

The College of Physicians long followed the example of the Father of Medicine in giving regulations for the dress of physicians. The College Statutes[30] drawn up in 1647 contained a chapter "Of the Ornament and Cloathing of Phisicians":

> We appoint according to the advice of Hippocrates, That all the Fellows be clothed with a decent Garb, as often as they come to the Colledge, or go forth in publick, lest the excellency and dignity of our Art, by reason of slovingliness should be reproached and contemned by the Vulgar.
>
> Wherefore we appoint and ordain, That the President and Pro-President, Electors, Censors, and all other Fellows, in all greater Meetings, Feasts of the Colledge, Funerals, and Anatomical Administrations, be clothed with Gown and other decent apparel, upon penalty of five shillings to be paid to the Colledge, as often as they shall be delinquent.

In France during the reign of Louis XIV physicians of the older school wore a long gown like a magistrate's, a wide hat, and a great wig; they were proud of their long beards and walked slowly and with dignity. "La barbe," says Toinette in "Le Malade Imaginaire," "fait plus de la moitié d'un médecin."

> Affecter un air pedantesque
> Cracher du grec et du latin,
> Longue perruque, habit grotesque,

> De la fourrure et du satin,
> Tout cela reuni, fait presque
> Ce qu'on appelle un médecin.[31]

Physicians of the younger generation abandoned the old costume; they wore the dress of a merchant or citizen of the better sort, a coat of cloth or velvet, ornamented with lace; when walking, they held a gold-headed or a bill-headed cane (*bec de corbin*). They no longer wore the wide-brimmed hat, but replaced it by the three-cornered hat with feathers (*le tricorne emplumé*) over the high powdered wig.

The Dutch Anatomies of the seventeenth-century provide some very fine representations of the medical men of the period. The earliest known of these is the "Anatomie" of Dr. Sebastian Egberts by Arend Pieterosz (1603) in the Amsterdam Gallery, representing twenty-eight physicians, with high ruffed collars and Vandyke beards, gathered round the demonstrator.

Splendid representations of costume are given in the "Anatomie" by Thomas de Keyser (1619) also in Amsterdam; in the Anatomy of Dr. van der Meer by Van Mierevelt (1617) in the Delft Hospital; in the well-known Anatomy of Dr. Tulp by Rembrandt (1632) at the Hague; in Adriaen Backer's picture of a dissection by Dr. Frederik Ruysch (1607) in the Amsterdam Gallery; and in Johan van Neck's picture of the same physician demonstrating the viscera of an infant. All these pictures are reproduced in Holländer's book on medicine in classical painting.[32]

> As we survey the strong, valid faces of these Dutch physicians, richly clad in silk or velvet gowns, or jerkins with high ruffed collars, we get no bad idea of the dignity of the profession in the seventeenth century. In the Rembrandt pictures, in the two Anatomies of Dr. Ruysch, and in Nicholaes Maes' painting of the chiefs of the Surgeons Guild (Amsterdam, 1680), the ruffed collars have already become Geneva bands. In Rembrandt's Doctor Tulp, as in Greenbury's "Anatomy" of Sir Charles Scarborough (1649) in the Barbers Hall, London, the short, lace-edged collar, which was evidently a token of wealth or worldly place, is in evidence.[33]

> In England during the seventeenth century the learned professions were distinguished by a number of absurd customs and carried the affectation of superlative wisdom to a ridiculous extreme.
>
> Their garb, gait, and gestures were grotesque; the physician was disfigured under a grave and solemn countenance; he was caparisoned in an enormous wig, a full-trimmed coat, buttoned to the bottom, and other extravagant paraphernalia.[34]

Contemporary costume fell under the lash of Gideon Harvey (1640–1700), himself half-quack, who wrote several controversial and satirical works on medicine. In his "Casus Medico-Chirurgicus" (1678) he speaks of a consultation in which he met two other practitioners:

> One much of the *meen* of some Renegado-Divine or School-master turn'd to Physick, vested and tunickt with black; the other Campagne Tunickt with gray, smoking a Pipe of Tobacco al Indiano.

Writing of himself he says:

> Sure I am, I was never a Renegado-Divine, a School-master, or Trooper turn'd to Physick, or ever put the dice

upon them by a forged *Diploma* from *Oxford;* neither am I a Meer *Velvetier* that hath nothing but the Plush jacket on his back, to shew what trade he is of.

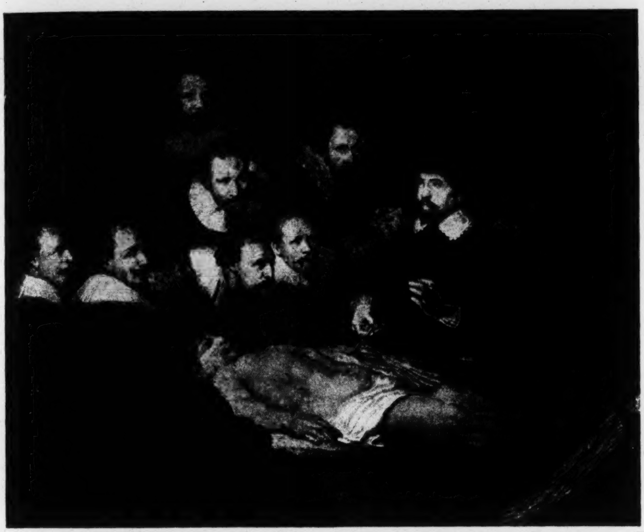

FIG. 5. REMBRANDT'S ANATOMY OF DR. TULP. (REPRODUCED FROM AN ETCHING BY FREY.)

The seventeenth and eighteenth centuries were the golden age of lace. The sexes rivalled each other in its extravagant use. Its use was not discontinued by men until the French Revolution. Lace collars of the early seventeenth century gave place to plain "Geneva" bands and laced cravats, in the case of masculine wear, as the century advanced, for when huge periwigs covered the back and shoulders the lace could only show on the breast.

In the early years of the eighteenth century medical costume was still very magnificent, and affords evidence (as Garrison points out) that the social status of the physician was if anything better then than it is today. This was *the* age of wigs and sticks.

Lady Mary Wortley Montagu, in her "Town Eclogues" (1715), gives poetical expression to her feelings on being attacked by smallpox. The disease is said to have deprived her of very fine eye-lashes and to have otherwise impaired her beauty. In this poem Flavia, the wretched victim of the smallpox, reclines on a couch bewailing her lost beauty; she is visited by three physicians:

What now is left but, weeping to deplore
My beauty fled, and empire now no more
In tears, surrounded by my friends, I lay
Mask'd o'er, and trembled at the sight of day;
Mirmillio came my fortune to deplore
(A golden-headed cane well carv'd he bore),
Cordials, he cried, my spirits must restore.
Beauty is fled, and spirit is no more.
Galen, the grave officious Squirt was there,
With fruitless grief and unavailing care;
Machaon too, the great Machaon, known
By his red cloak, and his superior frown.[35]

In England in the eighteenth century the usual dress of a physician consisted of a powdered wig, a handsome coat of satin or velvet, with cravat and ruffles, short breeches, stockings and buckled shoes, a three-cornered hat (which was carried under the arm), and a gold-headed cane. There was no need for a "brighter dress" movement then, as velvet coats of scarlet, grey, brown, blue, lilac, and even violet were commonly worn.

Doran gives the following description of a German doctor of the eighteenth century:

> His wig snow white, thickly powdered, and excruciatingly curled. It had further the distinction of resting, one portion on the back and two descending in front of the shoulders. A scarlet cloth coat adorned with gold lace, ruffles deeper plaited than Lord Ogilvie's, a shirt frill as wide as a mainsail, silk stockings, knee breeches, and an acre of buckles on the shoes enriched with gold and gems, a low-crowned cocked hat under the arm, too small for the head, and a stout walking-stick or fancy cane, with clouded or carved headpiece, and even applied to prop the chin in cases where it was necessary to let it be thought that the physician was thinking.[36]

From about 1683 to 1756 muffs were commonly worn by men as well as by women. They were slung round the neck by a ribbon. Sir William Browne (1692–1774), a very eccentric old character, who was President of the College of Physicians in 1765–6, habitually carried a muff.

As President of the College, Sir William became involved in various disputes with the Licentiates which greatly agitated the medical world at the time. In 1766 the aggrieved Licentiates forced their way into the College during a meeting, and in the following year they made a regular assault on the College gates but were repulsed. These stirring events were made the subject of Samuel Foote's play "The Devil on two Sticks," in which Sir William Browne and his colleagues were caricatured. Foote is said to have given an inimitable representation of the pompous old President, with his wig and coat and odd figure, and glass applied to his eye. Sir William sent Foote a card complimenting the actor on having so happily represented him; but, as he had forgotten his muff, he good-humouredly sent him his own.

Whilst at Bath in 1767 Browne paid a visit to Bishop Warburton, who afterwards described his visitor as "a little well-fed gentleman, with a large muff in one hand, a small 'Horace' open in the other, and a spying-glass dangling on a black ribbon at his button."

On St. Luke's Day, 1771, being then eighty years of age, he went into the City in his laced coat, band, and fringed white gloves to pay his respects to the Lord Mayor. A gentleman present, observing that he looked very well, he replied, "he had neither wife nor debts."[37]

In Thomas Hudson's full-length portrait of Sir William Browne at the College of Physicians we have a good representation not only of the man but also of the Presidential insignia: the gold-brocaded gown, the caduceus, the mace, and the book of statutes.

There is nothing in the records of the College to show at what period or under what circumstances the handsome Presidential gown of black damask, edged and otherwise ornamented with gold lace was first used; but a gown similar in design to the one at present in use has certainly been worn for nearly two hundred years.

The caduceus is a silver rod or sceptre, bearing at its head the Arms of the College, supported by four serpents. It was designed and probably presented to the College in 1556 by Dr. John Caius. Dr. Caius said that

> . . . the silver rod indicates that the President should rule with gentleness and clemency, unlike those of olden time, who ruled with a rod of iron. The serpents, the symbols of prudence, teach the necessity of ruling prudently, while the Arms of the College, placed on the summit, indicate that gentleness and prudence are the means by which the College is sustained.

This venerable sceptre (now 376 years old) is still carried by Presidents of the College on all important occasions.

The Book of Statutes, bound in crimson velvet, edged with silver, also dates from the time of Dr. Caius.

The College mace, of silver gilt, was presented by Dr. John Lawson in 1683.

The President of the Royal College of Surgeons of England wears a gown of black silk, with purple facings and kimono sleeves, the front and sleeves of which are beset with tassels arranged in rows.

The President of the Royal Society of Medicine now wears a maroon colored gown, copied from the robe of a Doctor of Medicine of Padua of the eighteenth century.

The importance attached by physicians to matters of dress down to comparatively recent times is attested by the frequent references to it contained in works of medical ethics. As late as 1770 the famous Dr. John Gregory of Edinburgh wrote in his "Observations on the Duties and Offices of a Physician" (Lond., 1770): "Among the peculiar decorums of a physician's character, much regard has been had to a certain formality in dress, and a particular gravity in his behavior." After pointing out that a certain formality of dress is proper in the case of judges and magistrates, he proceeds:

> There is not natural propriety in a physician's wearing one dress in preference to another; it not being necessary that any particular respect or authority should be annexed to his office, independent of what his personal merit commands. Experience, indeed, has clearly shown, that all our external formalities have been often used as snares to impose on the weakness and credulity of mankind; that they in general have been most scrupulously adhered to by the most ignorant and impudent of the profession; that they frequently supplant real worth and genius; and that, so far from supporting the dignity of the profession, they often expose it to ridicule and contempt. If then there is no natural and real propriety in a physician's wearing a distinguishing dress, he can be under no obligation to use it, but what arises from the particular fashion of the country where he resides. This is an obligation, however, which common sense and prudence make it necessary he should regard. If the customs or prejudices of any country affix the idea of sense, knowledge, or dignity to a load of artificial hair worn on the head, to a gold-headed cane dangling at the wrist, to a full-trimmed coat, and a sword, it is unquestionably a physician's business, from the common principles of self-preservation, to equip himself accordingly.[38]

According to W. Wadd, Dr. Henry Revell Reynolds (1745–1811), physician-in-ordinary to George III, may be considered as the link between the ancient and modern costume of the Faculty: to the last, he wore a well-powdered wig and a silk coat:

> Here well-dressed Reynolds lies,
> As great a beau as ever!
> We may perhaps see one as wise,
> But sure a smarter never.[39]

Towards the end of the eighteenth century medical costume began to lose its color and splendor, together with its distinctive character, and there was a rapid transition to the comparatively drab styles of modern times. Even in 1769 a French poet was reproaching the faculty on account of its somber garb:

> Pourquoi vous revêtir de la couleur sinistre
> Dont se pare le deuil dans l'ombre des tombeaux?
> Quand on sait de la Parque émonder les ciseaux,
> Doit on affecter l'air de son cruel ministre?[40]

An interesting sidelight on medical costume is afforded by one of the "Intercepted Letters" of James Wardrop, the medical reformer whose savage but amusing satires disturbed the medical world of his day.[41] It shows that by the year 1833 medical costume had lost its distinctive character:

> *Dress* ought to be a matter of some consideration with you, and that too, as well as other things, has been revolutionizing in my day. At one period it was absolutely necessary for a London physician to look as like a clergyman as possible; but there are few who are silly enough now to adopt any peculiarity of dress. I have frequently hinted to Dr. Seymour what a grotesque appearance he cuts with his black breeches and stockings and silver knee-buckles—the costume of a head waiter at an hotel; also I am annoyed with that able chemist Doctor Prout's harlequin appearance. You can fancy nothing more ridiculous than this learned man parading the street with his black shorts, silver knee-buckles, silk stockings, and sky-blue coat, of an anomalous pattern, of which he is so vain, that I am told he absolutely gets a tailor in Devonshire, whom he used to employ when he was a schoolmaster, to make it for him. Well might it be said, my dear friend, "that all is vanity and vexation of spirit."

There were, however, several die-hards who held out to the last.

One was Dr. James Hamilton (1749–1835), author of works on purgative treatment, who was noted for his old-fashioned dress and manners.

> He was the last gentleman in Edinburgh who adhered to the single-breasted coat, breeches, and black-silk stockings, shoes and shoe-buckles, ruffles and wrist-frills, and tri-cocked hat of the last century; and a very handsome and picturesque figure he was in this quaint costume.[42]

Sir Astley Cooper (1768–1841) "was accustomed to dress in knee-breeches; and, with his large buckles, his powdered hair, pigtail, and cocked hat, a style of dress which he never changed, presented a tout ensemble not a little curious."[43]

Dr. Francis Boott (1792–1863), a physician and botanist, who practiced very successfully in London, besides being noted for his treatment of fevers, in which he gave abundance of air, contrary to the practice of the majority, was a judicious innovator in other respects. He was one of the first to discard the black coat, white neckcloth, knee-breeches, and black silk stockings, for the ordinary costume of the day.

> This was then a blue coat with brass buttons, and yellow waistcoat, which he continued to wear to the last; and thus by outliving the fashion, as he had forestalled it, he came to be as well known in 1860 as he had been in 1830.[44]

In a letter to the *British Medical Journal* (November 8, 1913, p. 1257) on "The Insanitary Frock Coat of the Medical Man" Dr. G. J. H. Evatt advocated the abolition of that time-honored garment. "It is too loose, too sweeping in its skirts, often worn too long a time owing to its cost, and should be sent to the old-clothes man." He recommended the adoption of a short cut-away coat, single breasted, and single-breasted vest, of twilled cloth or serge, and of the felt bowler in place of the silk hat. "Thus on sanitary grounds, the so-called 'doctor's livery' would follow the old gold-headed stick once part of a physician's equipment." This writer's wishes have been fulfilled; but there are many medical men who regret the passing of the frock coat and tall hat. There is no doubt that one of the chief agencies in bringing about the last great revolution in medical costume was the motor car. With the present dull uniformity in male attire it would take a Sherlock Holmes to find anything distinctive in the dress of his own Watson.

PLAGUE COSTUME

A special costume in times of plague was used by physicians and others in attendance upon the sick from an early period. In the "Fasciculus Medicinae" (Venice, 1493) of Joannes de Ketham there is a woodcut showing a physician, accompanied by attendants with lighted torches, at the bedside of a plague patient. The doctor is enveloped in a long overall, wears only a skull-cap on his head, and holds a medicated sponge before his mouth and nose as he feels the pulse. This prophylactic costume, which had originated in Italy, was adopted in other countries and was elaborated until it became a most fearsome looking garb.[45]

The pest-doctor of the fifteenth to seventeenth centuries, as illustrated by Thomas Bartholin and others, wore a long red or black gown of smooth material (usually leather), with gauntlets and a leather mask. The mask had a long beak, which was filled with aromatics, over which the air passed in respiration, and was fitted with glass covered openings for the eyes. A somewhat similar costume is worn by members of the Plague Prevention Service in North China to this day.

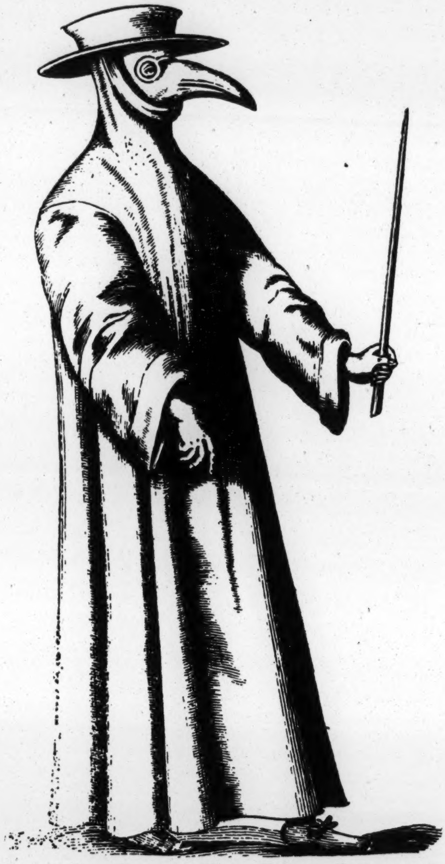

FIG. 6. PEST-DOCTOR. (FROM THOMAS BARTHOLIN'S "HISTORIAE ANATOMICAE," 1661.)

A graphic description of the pest-doctor is given by Hans Folz, Meistersinger of Nuremberg, in his "Spruch von der Pestilenz" (1482):

> As may be seen in picture here,
> In Rome the doctors do appear,
> When to their patients they are called,
> In places by the plague appalled,
> Their hats and cloaks, of fasion new,
> Are made of oilcloth, dark of hue,
> Their caps with glasses are designed,
> Their bills with antidotes all lined,
> That foulsome air may do no harm,
> Nor cause the doctor man alarm.
> The staff in hand must serve to show
> Their noble trade where'er they go.[46]

During the plague of Marseilles in 1720, the Town Council in addition to paying the physicians and surgeons a fixed salary, allowed them smocks of oiled cloth, and sedan chairs to carry them on their rounds. But many preferred to use the "full-dress" costume just described, as is evidenced by several contemporary drawings and descriptions. Gaffarel has an illustration of another type of dress worn by the doctors and hospital attendants. It consists of a cowl and a long robe of the "hooded-terror" type, as affected by members of the Klu Klux Klan and similar secret societies.[47]

There is no evidence that these plague costumes were worn in England. The precautions of the English doctors do not seem to have been much more elaborate than those of Joannes de Ketham; they appear to have relied more on personal cleanliness, on fumigation, and on the use of aromatics.

This is the advice given for the benefit of visiting physicians by Francis Herring in his "Certaine Rules, Directions or Advertisements" (1625):

> Let the chamber be perfumed, laid with herbs, the floor sprinkled with rose-water and vinegar &c . . . Then let him wash his face and hands with rose-water and rose-vinegar, and enter into the chamber with a waxe candle in one hand, and a sponge with rose-vinegar and wormewood, or some other pomander, to smell to. . . . Finally on his departure he must wash again in rose-water and vinegar, and lay by for a time the garments worn during the visit.

In London in the sixteenth century a red wand had to be carried by all those who waited on the infected: plague doctors, nurses, searchers, and buriers. At one time a white wand (2 or 3 feet in length) had to be carried by all inhabitants of an infected house. In May 1583 the color was changed to red. By an order issued later in the year all inhabitants of infected houses had to keep at home, and the red wand then became the distinctive mark of the doctors, nurses and others who tended the sick.[48]

The favorite prophylactics of the English physician seem to have been the pomander and the vinaigrette. These articles, which were for centuries a common adjunct to medical costume, may now be considered in some detail.

POMANDERS

The pomander (*pomme d'ambre*) was a mixture of aromatic substances, such as ambergris (whence the name), musk, civet, etc., carried sometimes in a case also known as a "pomander," as a preservative against infection or merely to modify bad smells.[49] In the earliest pomanders the various ingredients were simply made into a ball, which was carried in the hand or hung round the neck by a thread. Directions for making such a pomander are given by Andrew Boorde (1490–1549) in his "Ordre to be used in the pestyferous tyme of the pestylence & swetying sycknes":[50]

> A man cannot be to ware, nor can not kepe hym selfe to well from this syckenes, for it is so vehement and so parlouse, that the syckenes is taken with the savour of a mans clothes the which hath vysyted the infectious house for the infection wyl lye and hange longe in clothes.

He advises fumigation with a powder of his own composition, and adds:

> Or else make a pomaunder under this maner. Take of Lapdanum iii drammes, of the wodde of Aloes one drame, of amber of grece ii drames and a half; of nutmegges, of storax calamite, of eche a drame and a half; confect all these together with Rose-water, and make a ball.

William Bullein, in his "Dialogue against the Pestilence" (1564), advises the physician to

> . . . be not without a good pomeambre made of Storax, chalamite thre dragmes, laudani half an ounce, flowers of water lillies, violettes, the woode of aloes, spikenarde, of eche a drame and a halfe, the three sanders of eache halfe a dram, cinamon two scruples, mastiste xx graines, white poppy sede, campher, of each a scruple, amber and muske, of eche three graines, with rosewater, in a warme morter, make a pomeamber, make a hole in it, and put a silke lace through it, and weare this against corrupted aire.

In the same writer's "Bulwarke of Defense" (1562) there is another recipe for "a precious pomamber to be worne against foule stinkyng aire."

Thomas Phayre (1510?–1560), the first English writer on diseases of children, gives, in his "Treatise on the Pestilence" (first edition, 1544?), directions for making "lytle balles or pomaunders."

Another form of the pomander, recommended by Dr. John Woodall (1556–1643), and a favorite prophylactic in time of plague, was "a good Sivill orange stuck with cloves."[51] Cardinal Wolsey, we are told by Cavendish, would hold in his hand

> . . . a very fair orange, whereof the meat or substance within was taken out, and filled up again with the part of a sponge, wherein was vinegar, and other confections against the pestilent airs; the which he most commonly smelt unto, passing among the press, or else when he was pestered with many suitors.

Oliver de la Haye, who in 1348 wrote a poem describing the Black Death, mentions "artificial apples, made of ambergris and many other noble substances, which smell very strong, refresh the brain and give protection against foul airs."

Pomander cases assumed a great variety of forms, but were commonly made in the shape of an apple or orange, of gold, silver or ivory. They sometimes opened on a hinge, or unscrewed into halves, and contained several partitions, in each of which was placed a different perfume; at other times the scent was made into a ball and held in a case with perforations. They were in use until the close of the seventeenth century.[52] Some fine early examples may be seen in the British Museum and in the Wellcome Historical Medical Museum, London.

When, towards the end of the seventeenth century, canes became fashionable it was soon realized that they could be made a more convenient receptacle for perfumes than the old pomander cases. "A cane garnished with golde, having a perfume in the toppe" had been amongst the possessions of Henry VIII, but the earliest reference to a physician's cane so equipped is dated 1678.

CANES AND VINAIGRETTES

The physician's cane was one of the most ancient and important of his accountrements. Without entering into the questions of its origin, its symbolism, or its connection with the herald's wand or caduceus of Hermes or the staff of Aesculapius—questions which have received a good deal of attention—we shall proceed to a consideration of its history in more recent times.[53]

As Jeaffreson says:

> The cane is now disused, but up to very recent times no doctor of medicine presumed to pay a professional visit, or even to be seen in public, without this mystic wand. Long as a footman's stick, smooth and varnished, with a heavy gold knob or cross-bar at the top, it was an instrument with which, down to the present century, every prudent aspirant to medical practice was provided.[54]

As already mentioned: "A cane, garnished with gold" was one of the possessions of Henry VIII, but such canes were probably very uncommon in Tudor times. This cane is probably the one described by von Boehn as a "veritable tool-chest." In addition to the perfume flask, its handle held a sundial, a pair of pincers, a compass, a yard-measure, a knife, a file, and a golden touchstone.[55]

During the reign of Charles II canes became fashionable, and it was then realized that they could be made a more convenient receptacle for perfumes than the old pomander cases. According to a humourous tract entitled "The Quack's Academy," printed in 1678, the pomander-stick was at that time an indispensable article of medical costume[56]:

> Your outward requisites are a decent black suit; and, if your credit will stretch so far in Long-lane, a plush jacket, not a pin the worse though threadbare as a taylor's cloke; it shews the more reverend antiquity. Secondly, like Mercury, you must always carry a caduceus or conjuring japan in your hand, capped with a civet-box; with which you must walk with Spanish gravity, as in deep contemplation upon an arbitrament between life and death. Thirdly, a convenient lodging not forgetting a hatch at the door; a chamber hung either with Dutch pictures, or looking-glasses, belittered with urinals or empty gally-pots; and phials filled with tap-droppings, or fair water, coloured with saunders. Any sexton will furnish your window with a skull, in hope of your custom; over which hang up the skeleton of a monkey, to proclaim your skill in anatomy.
>
> Further let your table be never without some old musty Greek or Arabic author, and the fourth book of Cornelius Agrippa's Occult Philosophy, wide open, to amuse the spectators; with half a dozen of gilt shillings, as so many guineas received that morning for fees.

Gideon Harvey, in his "The Conclave of Physicians" (1686), a scurrilous attack on the College of Physicians, tells of a doctor who by

> . . . appuising or resting his velvet body on his Japan Crutch, and fixing his intellect, by drawing the broad-brimm'd beaver over his eyes, seemeth to mimick a decrepid gravity, and by that to weigh himself down to the bottom of your belly, to rummage for the disease.

He also refers scathingly to "conceited caps and volpony gowns."

According to Dr. Michael Foster,[57] who has made a special study of them, pomander sticks assumed three main forms.

The first and simplest consist of an ivory pear-shaped handle hollowed into a cavity. The upper part of the head unscrews, forming a lid for the recepticle. Such a box could be used for the pomander, a paste or mass of aromatic substances rolled into balls, or dried aromatic leaves.

In the second form the cavity is lined with some impermeable substance and has a plate with perforated holes, or vinaigrette placed across it; below this plate a sponge soaked in some aromatic volatile liquid was placed.

The third and later form is simply a plain vinaigrette without a cover, let into the head of the cane without any knob or apple.

Seventeenth century sticks were very long and were usually grasped below the actual handle. In the eighteenth century, *the* age for sticks, the physician's cane was quite distinctive, being longer and heavier than the small flat-headed canes of the beaux. It was the butt of the satirists, and was, together with the three-tailed wig, seized upon by the caricaturist. As Wadd[58] has it:

> Physic of old, her entry made
> Beneath th'immense full bottom's shade,
> While the gilt cane, with solemn pride,
> To each sagacious nose applied,
> Seems but a necessary prop,
> To bear the weight of wig at top.

The Gold-headed Cane, most famous of all medical relics, represents a somewhat rare form of the physician's cane. Unlike most doctors' canes it has a gold crutch handle instead of a knob; moreover, its golden handle upon which are engraved the arms of its successive owners: Dr. John Radcliffe (1650–1714); Dr. Richard Mead(1673–1754); Dr. Anthony Askew (1722–1774); Dr. William Pitcairn (1711–1791), and Dr. Matthew Baillie (1761–1823), has no cavity for pomander or vinaigrette. The Gold-headed Cane was presented to the Royal College of Physicians of London by the widow of Dr. Matthew Baillie in 1825.

Dr. John Ayrton Paris (1785–1856), P.R.C.P., suggested that the crutch-handled cane was a singularity affected by Radcliffe, who was in most respects "a rule to himself." He states further:

> The physician's cane proper had a rounded knob or head, often of gold, sometimes of silver, but in later times generally of ivory. In earlier times this knob was perforated with holes, and it had within a cavity or chamber, *pyxidicula aromatum vel receptaculum aceti* for aromatic or Marseilles vinegar—le vinaigre des quatre voleurs (so called from the immunity said to have been enjoyed by four thieves who used it and were able to rob the bodies of plague victims during the great epidemic at Marseilles in 1720–21). The head of the cane was thus a vinaigrette, which the doctor held to his nose when he went into a sick chamber, so that its fumes might protect him from contagion and other noxious exhalations from the patient.[59]

Gideon Harvey's reference to a Japan Crutch, already quoted, would suggest, however, that the crutch was a common and recognized variety of the physician's cane.

Commenting on the fact that vinaigrette canes had become rare in his day, Dr. Paris stated that he had seen one such cane in the west of England, which had belonged originally to a celebrated physician of Exeter in the time of James I, and subsequently to

Dr. William Musgrave (1655–1721), also of that city.

Several physicians' canes and pomander sticks are preserved at the Royal College of Physicians and the Wellcome Historical Medical Museum.

PERFUMED GLOVES

A very curious fashion, allied to the use of pomanders, was that of wearing perfumed gloves. These gloves were known in the time of Henry VIII, became fashionable under Elizabeth, when it was a custom to bring them as presents from Italy, and continued to be used up to the middle of the eighteenth century.

The use of scented gloves was recommended by several physicians. William Bullein, in his "Bulwarke of Defense against all Sicknes," already quoted, says "gloves swetely perfumed, with muske, zivet, amber grice, and oile de Ben, be very wholesome for Citizens that dwell in close, currepted foule aire."

Dr. Robert James, the friend of Samuel Johnson, in his translation of Simon Paulli's "Treatise on Tobacco, Tea, etc.," (1746) says: "The perfumed gloves, sent us from Greece, are more esteemed than those smelling of amber, muske, staste, and cassia, sent us from Italy and Spain."

The celebrated Friedrich Hoffmann (1660–1742), of Halle, in his "Medicus Politicus" (1738), a treatise on medical ethics, protested against the use of perfumes by physicians:

> The physician should refrain from perfuming himself with musk and amber. Indeed, besides proclaiming the approach of an effeminate man, they often cause hysterical attacks in women, to whom nice odours are disturbing.

Our ancestors had to encounter so many unsavory odors that their fondness for perfumes need not surprise us.

Under the Will of Dr. Baldwin Hamey (1600–1676), each one of the Elects present at the annual meeting of the College of Physicians of London held for the election of President was to be given a pair of gloves of the value of ten shillings, and each Fellow present a pair valued at two shillings and sixpence. This trust was faithfully discharged for many years. The ten shilling gloves are described in the Cash Books of the College as being fringed; they were probably fringed with lace. The cheaper gloves were probably placed on the table, that the Fellows might select such as fitted them. They are described as "scrambling for them." As early as 1711 some of the Fellows were complaining that the gloves were not worth two shillings and sixpence, and they had the option of receiving either the gloves or their value in money. The gift is now always paid in money, every Fellow present at the Presidential election receiving a new half-crown. The "Elects," who were entitled to the ten-shilling gloves, have ceased to exist.

In the early part of the eighteenth century candidates appearing for examination before the Barber-Surgeons Company of London were required to present gloves to the examiners. At a later date "glove money" was accepted instead, and on 10 December 1725 this was raised from six shillings to ten shillings and sixpense.[60]

Judging by the many representations in pictures, physicians appear to have been very proud of their long gauntlets, trimmed with lace and ribbons. In Holbein's portrait of Dr. John Chambre (in Vienna) and in the portraits of Dr. John Caius and Dr.

Robert Fludd (in the College of Physicians) these worthies are displaying their gloves in their hands. According to Max von Boehn both sexes in the sixteenth century had gloves of the same cut, which were usually much too big, and they seldom wore more than one at a time. At a later date gloves and muffs were favoured by physicians as they helped to keep the hands fine and smooth and at an even temperature.

WIGS

Wigs (periwigs) are seldom mentioned until the reign of Elizabeth; and according to Stow they were brought into England about the time of the Massacre of Paris.[61] About 1595, when their use became frequent, there was apparently some difficulty in keeping up the supply, and it was a common occurrence for children to be enticed away and deprived of their hair by agents of the wig makers. In the time of Charles II enormous periwigs were worn, and it was the fashion for the beaux to carry large combs of ivory or tortoise-shell with which they combed their locks in public on any and every occasion. The full-bottomed wig was the variety commonly worn by the learned professions and those who affected particular gravity. Farquhar in his comedy, "Love and a Bottle" (1698), remarks that a full wig is imagined as "infallible a token of wit as a laurel." From the time of James II until well on into the reign of George III the wig formed no inconsiderable part of the medical costume. Fielding makes his Mock Doctor, in the play of that name (1732) exclaim: "I must have a physician's habit, for a physician can no more prescribe without a full wig than without a fee."

The doctors of that day certainly owed much of their dignity and their imposing presence to the long wig, and in the few portraits in which they are shown without one they look very odd. It is interesting to compare two portraits of Dr. Richard Mead in the Royal College of Physicians, in one of which, by Allan Ramsay, he is resplendent in a brown velvet coat, lace cuffs, and wig, and the other, by an unknown artist, in which his close-cropped head is devoid of artificial adornment.

It is related by Wadd[62] that the wig of Dr. Richard Brocklesby (1722–1797), the physician and friend of Johnson and Burke, was carried daily through High Change by the barber, exclaiming "Make way for Dr. Brocklesby's wig!"

To the young physician setting up in practice a fine long wig was of the greatest importance. It gave an appearance of maturity, and converted the veriest tyro into a learned and dignified practitioner.

Each son of Sol, to make him look more big,
Had on a large, grave, decent, three-tailed wig;
His clothes full-trimmed, with button holes behind,
Stiff were the skirts, with buckram stoutly lined;
The cloth-cut velvet, or more reverend black,
Full made, and powdered half-way down his back;
Large decent cuffs, which near the ground did reach,
With half-a-dozen buttons fix'd on each.
Grave were their faces—fix'd in solemn state,
These men struck awe; their children carried weight.
In reverend wigs old heads young shoulders bore,
And twenty-five or thirty seemed threescore.[63]

An anonymous account of the life of Dr. Messenger Monsey, the eccentric physician to Chelsea Hospital, who died in 1788 at the age of ninety-five, contains the following piece of fictitious autobiography:

> Before I set out I ordered our college barber to make me what the wags call a lion, or a pompey, literally nothing more than a good physical wig, under the shadow of which, by the assistance of a handsome cane, properly applied to the immobile muscles of my face, and a few very significant shrugs, and solemn nods, I soon acquired the reputation of an eminent physician.[64]

The last physician of eminence to wear a wig is said to have been Dr. Henry Revell Reynolds (1745–1811), Physician to George III, who did so to the last. He was considered by Wadd to be the link between the ancient and modern costume of the Faculty; in addition to his well-powdered wig he wore a silk coat.

Academic Costume

No thorough study has so far been made of academic costume, although a great mass of information has been collected by Professor E. C. Clark, Hastings Rashdall and others.[65]

Academic costume resembles legal costume in having had its origin within the Church. The whole subject is, however, extremely involved, and there are many vexed questions as to how far different articles of dress are derived from the ecclesiastical. The physician, like most medieval scholars, was often a clerk, and had to wear the clerkly gown and the tonsure. This being so it is difficult to distinguish between academical and ecclesiastical robes, notably in the cases of brasses and monuments. Another source of confusion is the great variety of names by which the different parts of the academic costume are called in the university statutes and elsewhere.

The most important parts of academic dress are (1) the *pileus* or cap, (2) the *caputium* or hood, and (3) the robe or gown.

The *pileus* or cap was in early times the most distinctive garment of a university Doctor. There were two main types: (1) a plain, close-fitting skull-cap; (2) a round cap or bonnet with a point in the center and a general appearance of squareness (owing to its being made of four square pieces of material). This latter form underwent several modifications, resulting eventually in the square cap (mortar-board) of modern times. There are, however, several early pictures in which medical men are depicted wearing brimless hats shaped like a truncated cone.

The *hood* (*caputium*) was a head-dress universally worn in the Middle Ages, and is now best known in the form of the monk's cowl. It had originally no academic or ecclesiastical significance, but came in time to be restricted to university graduates. At an early period the hood itself gave way to a cap as a covering for the head, and the hood was then thrown back over the shoulders like a cape. The hood had a long streamer or tail (known as a "liripipe"), which was sometimes wound turban-wise round the head or worn as a scarf round the shoulders. The hood originally had three uses: as a head-covering, as a cape, and, when hanging down, as a bag or pocket in which alms may have been placed. The word "liripipe," it may be noted, is also used to denote the pendent false sleeves, often seen in representations of medieval attire, and also the tails of long-pointed shoes.

The undergraduate's hood was black, not lined, and it had a long liripipe or streamer; the graduate's hood was furred or lined and had a short liripipe. The various degrees were indicated by differences of lining.

The *tippet* is another part of the early costume of certain Doctors, and was originally the shoulder-cape forming part of the same garment as the hood. It was a mark of dignity and distinction, and was usually composed of fur.

The *robe* or *gown* (*toga* or *roba talaris*) was probably originally derived from the Benedictine habit. At an early date gowns of different color and design were appropriated to the graduates and Doctors in the various faculties. Franklyn[66] recognizes three main types of academic gown:

1. A gown with short open bell-shaped sleeves.

2. A gown with long narrow closed sleeves.

3. A gown with long open wing-like sleeves.

Academic costume, wittily described by Sir John Bland-Sutton as the Haberdashery of Success,[67] is not now worn by physicians except on very special occasions, but up to the seventeenth century at least it was the doctor's usual form of attire. It has already been noted that by a Statute of the College of Physicians of London, dated 1647, it was obligatory on all Fellows to wear their gowns at all Meetings and Lectures, etc., on pain of a fine of five shillings. William Harvey, it will be remembered, left his "best velvet gowne" and all his "little silver instruments of surgerie" to his friend Sir Charles Scarborough. According to John Earle's satirical "Microcosmographie" (1628), a "meere dull physician . . . is distinguisht from an Empiricke by a round velvet cap and Doctor's gowne."

The academic full-dress costume of deans, rectors and professors at the universities was gorgeous in the extreme. Fielding Garrison reproduces the portrait and describes the costume of Hyacinthe Theodore Baron, dean of the medical faculty of Paris (1730–34).

> He wears a long, carefully curled wig, an ermine cape, a delicate transparent *rabat* in place of the stiff Geneva band, a red ecclesiastic cope or "regal dalmatic," with lace-ruffled sleeves, and, over his breast, a decoration suspended by a black ribbon.[68]

Great light is thrown upon costume by the several descriptions of the long and portentous graduation ceremonies at the various universities. One of the best known is John Locke's account of the annual graduation of doctors which he witnessed at Montpellier in 1675.[69] It may be mentioned here that there is in the Wellcome Historical Medical Museum a statue of François Rabelais in the robes of a Doctor of Medicine of Montpellier (1537), copied from the original robes preserved at the University of Montpellier.

At the resent day the hood is the outstanding feature of all academic costume. The hoods now worn by medical graduates of all the leading universities of the world are enumerated and described by Frank W. Haycraft in his book of university degrees and hoods.[70] Reference should also be made to the various university Calendars and Year-Books.

There are abundant materials for the study of the older forms of medical academic costume in early manuscripts, in medical incunabula, in innumerable titlepages and engravings, in the works of Loggan, Hollander, Richer, Corsini and Cabanès, and in the late Dr. A. S. Warthin's sumptuously illustrated book on "The Physician of the Dance of Death."[71]

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ANOTHER GLIMPSE OF MEDICINE IN THE SEVENTEENTH CENTURY: BEUGHEM'S BIBLIOGRAPHY

By LYNN THORNDIKE, PH.D.

NEW YORK CITY

IN the year 1681 Cornelius à Beughem published a bibliography of works which had appeared in print since the middle of the century in medicine and related fields. This "Bibliographia Medica et Physica Novissima" offers a picture of what men were reading and writing about during the third quarter of the seventeenth century. Unfortunately there is no subject index but only an alphabetical one by authors. I have therefore collated the items under various topical headings in order to ascertain what subjects were most frequently discussed during this period of three decades. Of course, such enumeration cannot pretend to exactitude. Some titles are too obscure to be classified. Some are classified under only one head and others under several. Some works are much longer than others or for further reasons should carry more weight. One item may be a mere brochure, another a *magnum opus*. Some volumes are listed twice in the bibliography under the names of both author and editor or commentator, others receive but a single mention. Subject, however, to these and other limitations our survey and enumeration may serve to give some rough idea of the scope of medicine and the interests of members of the medical profession at that time. We shall restrict our census to the works in Latin which constitute the bulk of the bibliography (305 pages) and omit the appendices giving anonymous works, books in Greek and oriental languages, and in the various European vernaculars. These all together embrace a much smaller number of items (146 pages but more loosely spaced and with longer titles) and would probably add little to the results obtained from the main body of the work, since works of importance still usually appeared first in Latin.

Although Beughem's bibliography includes chemistry, anatomy, botany and physics as well as medicine, the last named field is decidedly that of preponderant interest. About one hundred and thirty-six authors treat of medicine in a general or inclusive way, sixty-three discuss medical practice, and four more, prescriptions. Ten deal with the study of medicine and the elements of the subject, eleven with the history of medicine, one with medical bibliography, one with military medicine, three with the veterinary's art, and about twenty-five with surgery. Thirty-seven write on cures, thirty-six on diseases and pathology in general, four on children's diseases, and five on diseases of women. There are thirty-two works on childbirth, seven on menses, two on pollutio nocturna. There are nineteen collections of *Consilia*, those records of cases which we possess from the thirteenth century on. I counted thirteen items as coming under the caption of medical controversies, but the list might be considerably extended. Hygiene or regulation of health occupies the attention of twelve pens, astrological medicine ten, and critical days three. Six write on diagnosis, two on the pulse, eight on urine, a score on diet and related matters, seven on baths, nineteen on bloodletting or phlebotomy, six on purgatives, one each on gymnastics, incubation, flagellation and fasting. The classical tradition still bulked large in the medical literature of the third quarter of the seventeenth century. Hippocrates is the author or subject of no less than sixty-seven items in Beughem's bibliography, far outdistancing Galen whose name appears only about a score of times.

Of particular diseases or incidents of disease and abnormal conditions upon which treatises were published in this period we may note first fevers which, constituting a group of ailments rather than a single disease, were discussed by some sixty writers. Next in order of frequency of treatment came the pest on which there were thirty-six works, while there were but two each on other epidemics, on contagious diseases, and on contagion, and another on infection. Syphilis, the theme of so many tracts at the close of the fifteenth and beginning of the sixteenth centuries, now was the subject of but eight, while on leprosy which had by now become scarce in Europe there was but a single treatise and likewise one on elephantiasis. Scurvy, on the other hand, attracted the attention of twenty-three authors. Fifteen treated of the stone and twelve of gout, thirteen of apoplexy, but only two of cancer, perhaps because no one knew what to say. There were no fewer than fourteen works on hypochondriacs and seventeen on epilepsy. Five authors treated of mental diseases in general, and three each of frenzy and mania. Twelve wrote on consumption and tuberculosis, eleven on pleuritis, five on pneumonia, twelve on dysentery, two on diarrhea, and three on constipation. One discussed diseases of head and throat. Six or seven others made headaches their subject. One wrote on unspecified diseases of the heart, four on palpitation, and two on heartburn.

Other specific ailments and the number of authors writing distinct treatises upon them were in roughly alphabetical order: abscesses two; angina eight, of which one was angina of children; arthritis nine; asthma seven; atrophy four; catarrh ten but colds only one; cholera five; colic nine; convulsions four; deafness two; dropsy eight; drunkenness two. Apparently alcoholism did not worry physicians of the seventeenth century, perhaps because gin had not yet been introduced. Resuming our list we note: empyema three; erysipelas one; fistula two; hemorrhoids three; hemorrhage three; spitting blood one; hernia three; hydrocephele one; hysteria four; incubus two; inflammation three; insomnia two; jaundice four; lethargy three; melancholy four; moles or warts two; nephritis two; ophthalmia two; paralysis six; plica two; scab two; spina ventosa three; diseases of the spleen four; syncope three; toothache four; bleeding gums one; ulcers four; vertigo three; vomiting two; and wounds ten. Yet other diseases mentioned but once are: paronychia, ptyalismus, strangury, anorexia, trichosis or trichiasis, other diseases of the hair or nails, canine appetite, chlorosis, diseases of the private parts, gonorrhea, blindness, indigestion, piles, rabies, rickets, varicose veins, lupus, diabetes, camp fever, worms, and sleep walking. Three wrote on old age, one on relapses, one on death, two on embalming, and one on corpses not corrupting.

There were about eighty treatises on pharmacy in general, although it was sometimes difficult to determine if a title should be classed as pharmaceutical or botanical. Seven authors wrote on poisons. In addition there were separate treatises on particular drugs and medicaments as follows: antimony one; potable gold four; the bezoar stone, another hoary superstition, four; cosmetics one; hyssop one; terra Lemnia one; incense one; juniper one; jalap root one; mandragora one; mint one; musk one; opium five; quinine six; theriac six. Thus time-worn pharmaceutical fables vied with new and potent drugs in the warfare of medical monographs. The unguentum armarium or sympathetic powder was discussed by some twenty-one authors, many of whom however had written before 1650 and were now reprinted in a *Theatrum* or collection of tracts upon that favorite occult theme of the century. Tobacco was the subject of five works, chocolate and coffee of two each, tea of one. Perhaps this is also the place to mention a treatise on coral and two on amber.

Of writers on anatomy there were over seventy, some of whom wrote a number of anatomical works. About twenty-one persons may be said to have composed general works of physiology. Discussions of parts of the human body may be medical or anatomical or physiological. In addition to discussions of the lymphatic vessels, bones and other members which were clearly anatomical and therefore have already been counted as such, there were two writers on the arteries, a dozen on the blood, and sixteen or seventeen more on the circulation of the blood or against Harvey, and three on blood transfusion. Albert Kyper published in 1654 and 1660 both medical institutions and a work of human physiology and psychology based on the Harveian hypothesis. The heart was discussed a good deal in connection with the circulation of the blood and we have already enumerated works on heart disease. Nine or ten remain which apparently discussed the heart itself. Five authors wrote on the brain, fifteen on the eyes. Ten discussed the digestion, of whom three wrote on the stomach, four on the chyle, and four on the pancreas and pancreatic juice. Four more treated of nutrition, six of the intestines, two of the kidneys, six of the liver, three of the lungs and eight of respiration. Two published several works on the genital organs of both sexes. On the mouth, tongue, and saliva there were two authors each. Four wrote on the pores and perspiration, two on tears and weeping, five on milk and the breasts, three on the spirits of the human body, and ten on the humors. Other parts and functions of the body to which separate works were devoted included the hair, beard, bile, muscles, nose, umbilicus, bladder, fat, appetite, throat, excrement and sneezing. One work discussed moving the ears.

Twenty-five writers dealt with human generation, eight with monsters, ten with the generation of animals, and four with study of the egg. Besides forty-eight authors who discussed animals in general or birds, insects, bees, the tarantula and its bite, fish, serpents, frogs and tadpoles, eels, storks, herring and the hyena, there was one work on the phoenix, five on the unicorn, and five on the viper which was still believed to have its medicinal uses. Three wrote on purple. Ten authors seem to treat of human nature, life, or certain aspects thereof, while of particular types of human beings nymphs, pigmies and twins were discussed once each and women thrice. Twenty-seven works may be called psychological, of which some discussed the senses, some the nerves, and two anger. Ten more authors wrote on memory, while speech, taste and thirst were each the theme of a single book.

Seventy-five writers gave attention to botanical subjects; two others discussed the botany of the Bible, and three more made manna their theme. Three works concerned with both plants and animals may be grouped together as biological. Three seem geological. Nine other authors wrote on fossils, six on gems and stones, another on gems mentioned in the Bible, one on minerals, three on salt. Ten may be grouped as natural history, including all three kingdoms, and four as natural philosophy. This last caption does not cover two more specific discussions of the corpuscular philosophy, and one of atomism. There are five writers on museums. Philosophy at large was the theme of eight, Cartesianism of a dozen or so more. One discussed the Biblical account of the creation, one the "physiology" of Christ's passion, and one the Copernican theory. There were three other works on astronomy and astrology.

Air was the subject of five authors, comets of a dozen. Fifteen discussed other cosmological and meteorological phenomena like earthquakes, seas, rivers, dew, rain and floods. More specifically two wrote on the elements in general, one on fire in particular, six on fountains, two on snow, three on tides, two on volcanoes, and two on winds.

In many cases because of ambiguous use in the title of the word *physica* or *physicus* it is dfficult to say if the work belongs under medicine or general natural philosophy or the stricter domain of physics as understood today. More definitely of the last named realm are nine authors on light, seven on heat, six on the magnet and magnetism, seven on gravity and motion, of whom two also discuss percussion, two on vacuums, two on sound, one each on mechanics, refraction, the equilibrium of fluids and the resistance of solids, while Sir Robert Boyle's works range over varied fields of dynamics, hydrostatics, and pneumatics.

One hundred and eight authors concerned themselves with alchemy and chemistry, subjects as yet scarcely distinguishable. Four more wrote on the conception of ferments and fermentation, two on glass, and some twenty-eight on iatrochemistry, then in high favor.

Magic and the occult arts—including witchcraft, necromancy, imprecations, specters, lycanthropy, philters, Chaldean Oracles, the Abracadabra and the planchette—were the theme of some eighteen writers, and marvels of nature of as many more. In addition to these, two wrote on each of the following: amulets, chiromancy, fascination, the doctrine of signatures, and pythologia, whatever that may have meant. Three discussed physiognomy, three hieroglyphs, and one omens. Such was still the hold of the occult and the marvelous upon the human mind. Five writers on the microcosm as well as those on astrology and astrological medicine already listed attest the continued belief in astral influence. Attraction, not including contagion or magnetism of which we have given an account elsewhere, and sympathy and antipathy, not including the sympathetic powder already mentioned, together engaged five authors. Five more wrote on the world soul (*spiritus mundi*).

As for scientific method, thirteen men treated of experiment or of experience and reason combined, six of errors, and one of hypotheses.

Subjects not yet mentioned and the number of authors dealing with them are: biography two; dictionaries three; education one; felicity one; foreign lands, peoples and tongues three; funeral orations three; the Lullian art one; memorable things two; and nothing (*de nihilo*) one. There were eleven orations and eulogies, three works on theology, two on politics, and one each on poetry, subtlety, topography, and weights and measures. Of inaugural disputations there were over a hundred and fifty but these have been classified already according to their subject matter. Observations was another form of literary expression about equal to them in number.

Hippocrates and Galen were far from being the only old authors whose works commanded attention during this period. Pliny was reedited or commented upon eleven times; Aristotle, eight. Other names of ancients were Dioscorides, Theophrastus, Diocles of Caristus, Aesculapius, Lucretius, Celsus, Scribonius Largus, Quintus Serenus Samonicus, Hermes Trismegistus, Sextus Placitus, Alexander of Tralles, Alexander Aphrodisias. Of Byzantine writers there are Nemesius and Simeon Seth. Of Arabic authors the leader was Avicenna, with Geber the alchemist next, while the names of Mesue and Rhazes occur but once each. Of medieval Latin authors Arnald of Villanova leads Albertus Magnus, while Theodoric the Ostrogoth, Michael Scot and Actuarius are found once each. But the most read medieval work of this period appears to have been the medical poem, "Schola Salernitana," here ascribed to John of Milan. Nicholas Flamel and Basil Valentine, the reputed fifteenth century alchemists, are also not forgotten. From the time of the Renaissance, so-called, we have Politian and Reuchlin, Hermolaus Barbarus and Leonicenus, Erasmus and Trithemius, Agricola and Melanchthon. Such modern writers are cited as Aldrovandi and Garcia da Orta, Francis Bacon and Thomas Browne, Sennert, Jung, Tycho Brahe and a number of others, but the three favorites, aside from Harvey and Descartes, are easily Paracelsus, Fernel and Cardan.

NOTES ON THE EARLY EDITIONS OF

OSLER'S TEXTBOOK OF MEDICINE

By H. E. MacDERMOT, M.D., F.R.C.P.(C.)

MONTREAL, CANADA

THE change and decay that so soon becomes the portion of most scientific books, is in none more rapid than amongst textbooks of medicine. They have their day and cease to be, but even then they may remain as landmarks along the shores of the stream of medical knowledge. The early editions of Osler's textbook are of particular interest in this respect, as they cover a period of such rapid growth in knowledge; and perhaps they will some day be examined from that point of view. At the moment, however, I am concerned with the details, both personal and literary, which attended the development of the book. I have looked through the set of editions in the Osler Library, and have made notes of some of the multitudinous alterations which the book underwent at Osler's hands, that is, for the first nine editions.[1] This collection includes some of his working copies, in which one can see his methods of work, and some, though not all, of his notes. They also contain many of the letters and miscellaneous writings he received about the book.

The first edition is represented by a copy of the first impression, which belonged to Lady Osler;[2] it has the inscription, "Grace Revere Gross, from her friend Wm. Osler, Feb. 25, 1892, Phila." His own specially bound working copy, interleaved, in two volumes, is of the second printing[3] (April, 1892). Very few changes were made in the second printing, but there is one correction by which it may be distinguished; the superfluous "e" in *Georgias* under the second motto on p. vi has been removed. Curiously enough, the error crept in again in the tenth edition: it is corrected in the eleventh. These mottoes were omitted altogether in the seventh, eighth, and ninth editions. Sir William also thought once of enlarging the translation of the first aphorism of Hippocrates, for the working copy of the second edition contains a suggested change to: "Life is short, but Art is long and the opportunities of learning it are fleeting: for things are often not what they seem, and to judge them is difficult."

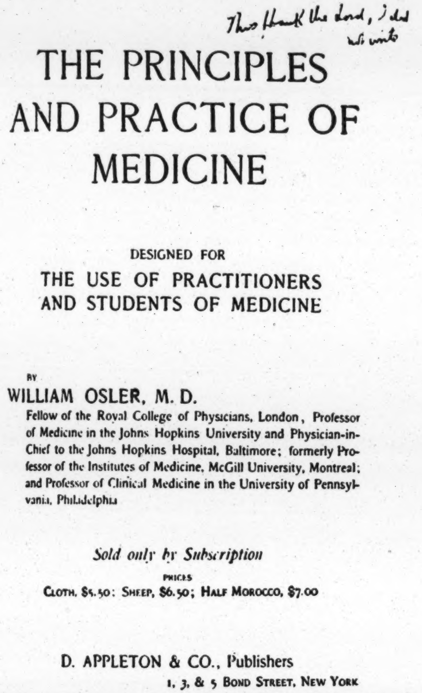
---

[1] The dates of these editions are 1892, 1895, 1898, 1901, 1902, 1905, 1909, 1912 and 1916 (both 8th ed.), and 1920.

[2] A first impression copy has also been presented to the Library by Dr. Viets.

[3] The copy which he gave to Dr. Hunter Robb had the following inscription: "N.B. This book was conceived in robbery and brought forth in fraud. In the spring of 1891 I coolly entered in & took possession of the working room of Dr. Hunter Robb—popularly known as the *Robin*. As in the old story of the Cookoo & the hedge sparrow I just turned him out of his comfortable nest, besplattered his floor with pamphlets papers & trash & played the devil generally with his comfort. In spite of the vilest treatment on my part he rarely failed to have oranges in his cupboard, chocolates &c (yum! yum!) on his table & gingerale & "Old Tom" on the sideboard. In moments of contrition I feel how sadly he has suffered—and as this is one of those rare occasions I have taken advantage of it & make here my public confession to him. Signed on behalf of the Author 4/21/92. E. Y. D."

He also sketched out in the fourth edition a plan of introduction "(1) To the Medical Student, (2) To the Practitioner," but went no further with it.



This, thank the Lord, I did not write

THE PRINCIPLES
AND PRACTICE OF
MEDICINE

DESIGNED FOR
THE USE OF PRACTITIONERS
AND STUDENTS OF MEDICINE

BY
WILLIAM OSLER, M. D.
Fellow of the Royal College of Physicians, London, Professor of Medicine in the Johns Hopkins University and Physician-in-Chief to the Johns Hopkins Hospital, Baltimore; formerly Professor of the Institutes of Medicine, McGill University, Montreal; and Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia

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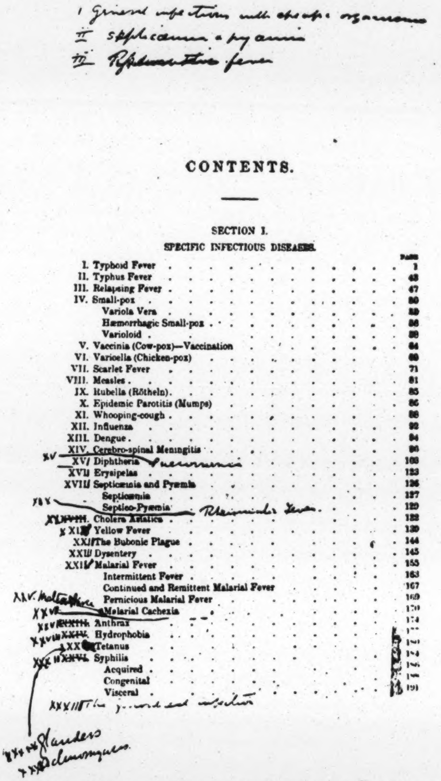
FIG. 1. FROM THE TITLE PAGE OF THE PUBLISHER'S PROSPECTUS, 1892, OF THE FIRST EDITION OF OSLER'S TEXTBOOK. THIS PROSPECTUS, ENDORSED BY HIM: "THIS, THANK THE LORD, I DID NOT WRITE," IS BOUND UP WITH HIS WORKING COPY OF THE BOOK, NO. 3544 IN THE OSLER LIBRARY, MCGILL UNIVERSITY.

The working copy of the first edition is overflowing with notes and insertions. There are two snapshots of him writing in his shirtsleeves, as he worked at the book in Baltimore, in the hot season. There is his charming little sketch on "The Writing of a Textbook": and his inscription: "*Private copy*. May all the curses of the good Bishop Ernulphus light on the borrower-and-not-returner or upon the stealer of this book."[4]

Across the publisher's prospectus at the end of the book he has scribbled: "This, thank the Lord, I did not write."



I General infections with [illegible] organisms
II Septicaemia & pyaemia
III Rheumatic fever

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FIG. 2. FROM THE TABLE OF CONTENTS, P. VII, OF OSLER'S WORKING COPY OF THE SECOND EDITION, 1895, OF HIS TEXTBOOK, SHOWING PNEUMONIA, RHEUMATIC FEVER, MALTA FEVER, GLANDERS, ETC. TRANSFERRED FOR THE 1898 EDITION TO THE SECTION OF SPECIFIC INFECTIOUS DISEASES. FROM NO. 3545 IN THE OSLER LIBRARY, MCGILL UNIVERSITY.

The first prefatory note is very short. Amongst those whom he thanks for help is W. S. Thayer. Someone has scored through the name with a pen, in his working copy, and in the margin Sir William has written, "Who the d— crossed out this?" Further down the page he has added, "That nymph H.S. confessed it. She did not like T."

---

[4] Ernulf, of Rochester, mildest of medieval bishops, put on record the comprehensive anathema which horrified Uncle Toby in "Tristram Shandy."

A few miscellaneous notes on the other editions may be given here, before dealing with the text. On the fly-leaf of the second edition, for example, he has pencilled, "Boodle account with D. Appleton & Co. 23,500 copies of 1st ed. printed. 17,500 of 2nd." There is a specially bound copy of the third edition, with the inscription on the fly-leaf, "Grace Revere Osler, with the author's ? ? ?" A copy of the "pirated" Edinburgh edition (the fourth) has been kept. By an oversight, this edition had not been copyrighted in Great Britain. The fifth edition was therefore prepared within a year, to prevent further infringement of rights. The library copy contains a cutting of the letter which Osler wrote to the *Lancet* in justification, as he put it, "of what Rabelais calls the pretty perquisite of a superfoetation." It was the fourth edition, by the way, on which the famous "examination paper" was set.

The Library contains two copies of the sixth edition; (a) a presentation copy to Lady Osler, with printed insert "No. 1 of the first 105,000 copies" (meaning, apparently, that this was the 100,001st copy of the work); and (b) a working copy filled with the usual notes and letters. On the fly-leaf of the latter there is a small newspaper clipping with the announcement by Messrs. Appleton & Co. that they had sold over 105,000 copies of the book, "in spite of the fact that its price is more than three times as great, its sales rival those of the most successful novels."[5] Dr. Cushing tells us that the very day Osler wrote the preface to the sixth edition, in which he said that he had rewritten so much of the book that it was in many respects quite new—on that day Schaudinn and Hoffmann read a paper before the Berlin Medical Society announcing the discovery of the *Spirochaeta pallida*. It might almost have been made the excuse for a fresh edition, but the regulation three years elapsed before the seventh appeared. Its preface reflected Osler's elation of spirit over the many recent discoveries: "One cannot but be impressed with the extraordinary rapidity of the progress of our knowledge of the acute infections."

With the sixth edition began the translation of the book into foreign languages. The French (1908), German (1909), Spanish (1915), and Chinese (1915, 1921, 1925) editions are all in the Library. The third Chinese edition illustrates an innovation in ancient literature, for in it the characters are arranged, Western fashion, from left to right across the page, instead of downwards from right to left.

Sir William remarks in his preface to the eighth edition that, "comparing the first edition with the present, very little remains of the original work." But even so a student could find much wise guidance in the first edition. Take the section on influenza. In the first edition we read:

> In every case the disease should be regarded as serious, and the patient should be confined to bed until the fever

---

[5] It may be recalled that Macaulay said of his History, "I shall not be satisfied unless I produce something which shall for a few days supersede the last fashionable novel on the tables of young ladies."

has completely disappeared. In this way alone can serious complications be avoided. From the outset the treatment should be supporting, and the patient should be carefully fed and well nursed. The bowels should be opened by a dose of calomel or a saline draught. At night ten grains of Dover's Powder may be given. At the onset a warm bath is sometimes grateful in relieving the pain in the back and limbs, but great care should be taken to have the bed well warmed, and the patient should be given after it a drink of hot lemonade. If the fever is high and there is delirium . . . small doses of antipyrin may be given and an ice-cap applied to the head. The medicinal antipyretics should be used with caution, as profound prostration sometimes develops in these cases. . . . Too much stress should not be laid upon the mental features. Delirium may be marked even with slight fever. In the cases with great cardiac weakness stimulants may be given freely, and during convalescence strychnine in full doses. . . . The convalescence requires careful management and it may be weeks or more before the patient is restored to full health. . . . The depression of spirits following this disease is one of its most unpleasant and obstinate features.

All the alteration this has undergone in his nine editions is the addition of a warning as to isolation of influenzal patients, and the disinfection of their nasal and bronchial secretions; a neutral statement as to the value of vaccines in prevention or cure; the substitution of acetyl-salicylic acid for antipyrin; and the recommendation of "an alkali such as potassium citrate (gr. xv, 1 grm.) four times a day."

Occasionally an earlier edition has a classical allusion which disappears later on. For instance, in speaking of antiseptic medication in typhoid fever, he deals first with the results obtained by others with such things as carbolic acid, iodine, calomel, salicin, etc., and then adds (ed. 1, p. 36):

> With the mercurial preparations I have no experience. Fortunately for the patients, a majority of these medicines meet one of the two objections which Hippocrates says the physician should always have in view—they do no harm!

In the sixth and succeeding editions it reads:

> In the various antiseptic drugs which have been advised I have no faith. Most of them do no harm, except that in private practice their use has too often diverted the practitioner from more rational and safer courses.

Again, under "Aortic insufficiency" the earlier editions have:

> I was in the habit of enforcing upon my students the etiological lesson by a reference to Bacchus and Vulcan, at whose shrines a majority of the cases of aortic insufficiency have worshipped, and not a few at those of Mars and Vulcan.[6]

But this disappears after the seventh edition. Another reference that one misses after this edition is in the section on "Aneurism":

> A remarkable instance of it in our own profession was afforded by the brilliant Thomas King Charles, who first had an aneurism in the left popliteal artery, 11 years subsequently an aneurism in the right leg, which was cured by pressure, and finally aneurisms of the carotid arteries.

And, in speaking of the transmission of tuberculosis: "Weber's cases are of special interest. One of his patients lost 4 wives in succession, one lost three and four lost two each."

---

[6] The epigram by which the lesson was "enforced" is quoted in Cushing's "Life" (1: 394); "Who serves the gods dies young—Venus, Bacchus, and Vulcan send in no bills in the 7th decade."

These modern Bluebeards appear only in the first six editions. As also did the following:

> Only a great master like Virchow could have won the profession from a belief in the *unity of phthisis* which the genius of Laennec had on anatomical grounds announced. . . . We repeated the striking aphorism of Niemeyer "The greatest evil which can happen to a consumptive is that he should become tuberculous."

In the first six editions only there is the following passage on St. Vitus's dance:

> Associated with some of these cases are curious mental disturbances; the patient becomes the subject of a form of obsession or a fixed idea. I was consulted recently about a young girl in whom the spasms were very slight, amounting only to a twitching of the eyes and slight jerking of the shoulder, but she had a most pronounced grade of the fixed idea known as arithmomania. Almost every action, even the most trifling, was preceded by the counting of a certain number of figures. Before she went to bed she had to tap her heel upon the side of the bedstead a certain number of times; before drinking the tumbler had to be rotated eight or ten times, and then when set down again the same act was repeated. Before opening the door a certain number of knocks had to be given. The greatest difficulty was experienced in getting her to brush her hair, as it took her so long to count the necessary number of figures before she began.

Under syphilis, his forcible comments on prophylaxis have been little changed, except for the following, which he left out after the third edition:

> If the offender bore the cross alone, I would say, forbear; but the physician behind the scenes knows that in countless instances syphilis has wrought havoc among innocent mothers and helpless infants. . . . It is for them he advocates protective measures.

There is something of this emphatic manner also in his reference to the use of the Brand baths in typhoid. He speaks of them (in the first edition only) as having been "introduced" by Currie of Liverpool, and later "forced upon the profession" by Brand of Stettin; and then goes on:

> This rigid method is not, however, without serious drawbacks, and personally I sympathize with those who designate it as entirely barbarous. To transfer a patient from a warm bed to a tub at 70 degs. Fahr. and to keep him there twenty minutes or longer in spite of his piteous entreaties, does seem harsh treatment, and the subsequent shivering and blueness look distressing. A majority of our patients complain of it bitterly, and in private practice it is scarcely feasible.

Not infrequently one comes across sentences or paragraphs that run practically unchanged through all the editions; such as his comment on pulmonary syphilis:

> It is to be borne in mind in the first place that hospital physicians and pathologists the world over bear witness to the extreme rarity of lung syphilis.

Or the following:

> Individuals who have inherited a tendency to gout, or who have shown any manifestations of it, should live temperately, abstain from alcohol and eat moderately. The open air life, with plenty of exercise and regular hours, does much to counteract an inborn tendency to the disease. . . .
>
> The reproach of van Helmont that a bloody Moloch presides in the chairs of

> medicine cannot be brought against the present generation of physicians. . . .
>
> Among the more remarkable vasomotor phenomena are the so-called stigmata or haemorrhages of the skin, such as were present in the celebrated case of Louise Lateau. In many cases these were undoubtedly fraudulent, but if as appears credible, such bleeding may occur in the hypnotic trance, there seems no reason to doubt its possibility in the trance of religious ecstasy.

There is no alteration in the following paragraph on neurasthenia:

> We do not all start in life with the same amount of nerve capital. Parents . . . may transmit to their children an organization which is defective in what for want of a better term we must call 'nerve force.' Such individuals furnish a considerable proportion of our neurasthenic patients. So long as they are content to transact a moderate business with their life capital, all may go well, but there is no reserve, and in the emergencies which constantly arise in the exigencies of modern life these small capitalists go under and come to us as bankrupts.

But in the third edition he added, probably with a chuckle:

> As van Gieson sonorously puts it, "the potential energies of the higher constellations of their association centres have been squandered by their ancestors."

There is also his reference to gouty people being prone to calculi: "Jerome Cardan to the contrary, who reckoned freedom from stone among the chief of the *dona podagrae*." And, from the second edition on, in speaking of the treatment of gout: "Much of the humbuggery in the profession still lingers about mineral waters, more particularly about the so-called lithia waters."

The "Salem witches" enter at the third edition:

> One of the saddest chapters in the history of human deception, that of the Salem witches, might be headed *hysteria in children*, since the tragedy resulted directly from the hysterical pranks of girls under twelve years of age.

As a concluding example, there is his reference to the cure for hiccough, which first appears in the second edition:

> Readers of Plato's Symposium will remember that the physician Eryximachus recommended to Aristophanes, who had hiccough from eating too much, either to hold his breath (which for trivial forms of hiccough is very satisfactory) or to gargle with a little water; but if it still continued, "tickle your nose with something and sneeze; and if you sneeze once or twice even the most violent hiccough is sure to go." The attack must have been of some severity, as it is stated subsequently that the hiccough did not disappear until Aristophanes had resorted to ["applied" in the second edition] the sneezing.

But on the whole, of course, there has been very thorough recasting, as well as many additions. A few examples only can be given. "There are probably more families with a luetic than with a tuberculous taint" (first edition) becomes "Syphilis is common in the community, and is no respecter of age, sex, or station in life." Under Whooping-cough he alters the sentence, "Children are usually terrified at the onset and run at once to the mother or nurse to be supported during the attack," which appears in the first five editions, to:

> The child knows for a few moments when the attack is coming on and tries in every way to check it, but failing to do so, runs terrified to its nurse or mother to be supported, or clutches anything nearby.

It is in the sixth edition also that he adds, in mentioning the conjunctival ecchymoses of whooping-cough, "bleeding 'tears of blood' (Trousseau)." In this edition too there appears for the first time, "'Reasons drawn from the urine are as brittle as the urinal' is a dictum of Thomas Fuller peculiarly appropriate in connection with this subject (albuminuria)." Up to the seventh edition he says, under pulmonary hemorrhage, "In a protracted case Cayley induced pneumothorax but without effect." In the eighth and ninth the rather discouraging effect of this reference to pneumothorax was corrected by changing the sentence to: "In protracted cases pneumothorax has been induced, sometimes with success."

In the chapter on Obesity he first uses the Byronic simile of "oily dropsy" in the third edition. In the fourth he adds, "an extraordinary phenomenon seen occasionally in excessively fat young persons is an uncontrollable tendency to sleep": and in the sixth he adds the final touch, "like the fat boy in Pickwick."

Again, in the fourth he adds:

> We must bear in mind at the outset the injunction of Hippocrates, Aph. iii, speaking of a full habit of the body, that extreme depletions are dangerous, and that the reduction must not be carried to an extreme. The aphorism of the celebrated Geo. Cheyne (whose history records one of the most successful instances of the treatment of obesity in literature) quoted at p. 470, contains the essence of good sense on the subject.

In the eighth edition the Hippocratic injunction is taken out, and Cheyne's aphorism only is left, being quoted here in full, instead of under Chronic Gastritis.

Under Chlorosis he has in the first five editions: "Cases are frequent, however, under the most favourable conditions of life." In the sixth he adds to this, "but not often in country-bred girls, as Maudlin sings in the *Compleat Angler*." In the third edition he had enlarged the original section with, "De Sauvages speaks of a *chlorose par amour*. Newly arrived Irish girls were very prone to the disease in Montreal. The 'corset and chlorosis' expresses O. Rosenbach's opinion." (Opposite this he noted in his working copy "but most chlorotics have good chests and no signs of visceroptosis," but did not use it.)

The sentence, "The normal man walks by faith, the tabetic by sight," first appears in the eighth edition.

One of the striking historical notes which appeared first in the sixth edition was the reference to Lord Shaftesbury's hydatid cyst:

> Historically, one of the most interesting cases is that of the first Lord Shaftesbury (Achitophel)[7] who had a tumour below the costal border for many years. It suppurated and was opened by the philosopher John Locke, his physician, who describes with great detail the escape of the bladder-like bodies. Among the Shaftesbury papers in the Record office are several other cases collected by Locke; the disease may have been more common in England at that period.

On the diagnosis of diabetes he has in the second edition: "It must not be forgotten that hysterical women sometimes put sugar in the urine for the purposes of deception." In the third and later editions this becomes:

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[7] By a curious oversight both on the part of Sir William and those who read proof for him, this was misspelt "Achitopel" in four successive editions, not being corrected until the tenth edition.

> Deception may be practised. . . . There is a case in the literature in which, when the cane sugar fraud was detected, the woman bought grape sugar and put it into her bladder.

In the first eight editions he has (on pericarditis): "Probably no serious disease is so frequently overlooked by the practitioner." But in the ninth he leaves out "by the practitioner." The eighth edition also has the last appearance of, "I have seen Murchison himself in doubt, and more than once I have known the diagnosis (of typhus) deferred until the *sectio cadaveris*."

The first five editions have (under Chronic Bronchitis):

> Septuagenarians should read O. W. Holmes' "De Senectute" [in footnote, "Over the Teacups," Boston, 1890] with reference to the care of the health *and the avoidance of catching cold. He lays stress upon the importance of the daily study of the thermometer and barometer.*

The italicized part is in the first edition only. The later reading is: "With care, chronic bronchitis may prove to be the slight ailment that, as O. W. Holmes says, promotes longevity."

In the eighth edition he writes (under Constipation):

> Captivated by the theories of Metchnikoff we have been for some years on the crest of a colonic wave, and intestinal toxaemia has been held responsible for many of the worst of the ills that flesh is heir to, more particularly arterio-sclerosis and old age. The seniles and pre-seniles of two continents have been taking sour milk and lacto-bacillus compounds to the great benefit of the manufacturing chemists! But the fad is passing, not, I hope, to be replaced by one even more serious, in which operation is advised for every case of intestinal stasis.

In his working copy he scores out the last sentence.

A good example of re-writing is to be found in the chapter on Anaemia. In the first edition he writes:

> It is interesting to note, however, that the pallor, particularly of the face, which is one of the most striking symptoms of anaemia, is just as characteristic of local anaemia due to fright or to nausea. There are persons persistently pale without actual anaemia, in whom the condition may be due to inherited peculiarities.

In the sixth and seventh this becomes:

> *Pseudo-Anaemia.*—The state of the skin and mucous membranes is usually a safe guide in judging of the presence of anaemia. There are certain conditions in which this is deceptive, and a marked pallor may exist with nearly normal corpuscles and haemoglobin. (1) The pallor of nausea and the anaemia following a drinking-bout (Katzenjammer!); (2) the apparent anaemia of Bright's disease, of certain cases of heart disease, of early arterio-sclerosis (Stengel); (3) of the morphia habitué, sometimes of the lead worker; and (4) of certain perfectly healthy individuals who are, so to speak, born pale and stay pale—these are some of the conditions in which with a pseudo-anaemia there is a normal or nearly normal blood-count and colour index.

In the eighth:

> In local anaemia we are sometimes deceived by the appearance of the skin and mucous membranes. A marked pallor may exist with normal corpuscles and haemoglobin; for example, the pallor after a drinking-bout; or of nausea; in certain cases of heart disease, in lead workers, and in the morphia habitué, the skin is often permanently pale. There are a few healthy people who are always pale, and yet have a practically normal blood count and colour index.

In the ninth:

Pseudo-anaemia is common. Pallor may exist with a normal or even a plus blood count and colour index. The transient pallor in nausea and after a drinking-bout is a vaso-motor affair. In aortic insufficiency, in lead workers, in the morphia habitué, the skin may be permanently pale. The skin of the face may be unusually thick, or the capillaries poorly developed, as in sedentary workers in contrast to the ruddy complexion of country people. The Latin races are paler than the Anglo-Saxons. There are healthy and strong individuals with a permanent pallor and normal corpuscles and haemoglobin.

The following paragraph appears only in the eighth edition, under Hysteria:

(g) *Self-inflicted wounds,* more particularly burns, are sometimes met with in hysterical patients. I saw at the Hotel Dieu, Paris, the remarkable condition described by Dieulafoy under the term Pathomimia, in which a young woman [*corrected in the margin to "man"*] supposed to be the subject of a severe trophic disorder, submitted to the amputation of the left arm before the confession was obtained that the lesions were self-inflicted. It is to be borne in mind that in Japan and other Eastern countries, spontaneous tears occur in the soft parts, usually of the legs—the so-called Kamitachi disease, believed to be due to variations in atmospheric conditions, particularly during thunderstorms.

But this is the one and only reference to Kamitachi disease, as the paragraph is shortened down in the ninth edition to read:

(3) *Pathomimia,* self-inflicted injuries, usually of the skin, by caustics, etc. In a case seen at the Hotel Dieu with Dieulafoy, the patient supposed to be the subject of severe trophic disorder, submitted to amputation of the arm before the confession was obtained that the lesions were self-inflicted.

As a final example, there is the following description in the sixth edition, under Infantilism:

Ateliosis: Progeria.—Under these terms signifying continuous youth and premature old age, Hastings Gilford has described interesting types of dwarfs. There are two varieties of ateliosis; the asexual, an infantilism without any connection with cretinism, syphilis or congenital heart disease. It is often more a delay than an arrest of development. The sexual form is the "Tom Thumb" variety of dwarf. There is a similar delay in development until puberty, when the sexual organs mature and the body becomes set or stereotyped as a miniature man or woman.

Progeria is a remarkable condition in which with infantilism, as shown in stature and proportion, there is premature decay, as shown in the facial appearance, attitude, loss of hair, musculature and fatty emaciation, and post mortem, extensive atheroma of arteries and degenerative (senile) changes in the viscera.

In the eighth edition this is condensed to:

Progeria.—Under this term Hastings Gilford has described a condition in children of incomplete development (infantilism) with premature decay. The facial appearance, the attitude, the loss of hair, the wasting of the skin, are those of old age, and post mortem the most extensive fibroid changes in the organs, particularly in the arteries and kidneys. The condition is probably associated with unknown changes in the internal secretions.

The notes in his working copies sometimes show him at work on his sentences. For instance, he pencils in his working copy of the first edition (on mitral incompetency): "The cardiac's [heart, *erased*] sleep-start in which just as the patient falls asleep he wakes with a feeling as if the heart was stopping and gasps for breath"; which is remodelled in the next edition to " . . . wakes gasping and feeling as if the heart was stopping."

Against the sentence "the face is flushed, particularly the cheeks" he writes "or only one cheek," and in the next edition (third) this becomes "The face is flushed, particularly one or both cheeks."

Under treatment of Smallpox he writes in his working copy (fifth ed.), "The red light treatment of the disease revived by Finsen is a survival of the old red-flannel method of . . . " which is enlarged in the next edition to read:

> The papules do not mature so well when protected from the light, and for centuries attempts have been made to modify the course of the pustules, by either excluding the light, or by changing its character. In the Middle Ages Gilbertus Magnus and John of Gaddesden recommended wrapping the patient in red flannel, and the latter treated in this way the son of Edward I. It was an old practice of the Egyptians and Arabians to cover the exposed parts of small-pox patients with gold-leaf. . . . Recently the red light treatment of the disease has been advocated by Finsen.

One rather regrets his treatment of a note such as this (on whooping cough):

> We may say to-day with Willis that "it rather cures by change of the season than is extinguished by remedies." Old women and empirics, as he remarks, are as often consulted as physicians. *The truth is, the only sure remedy is six or eight weeks;* and there is no disease which illustrates more painfully the futility of our therapeutic efforts. Six *or eight* weeks, a big bottle of paregoric, and a watchful nurse or mother, are the essentials. [Italics indicate his erasures.]

That with the corrections, is what he wrote in his working copy of the fifth edition, but all that appeared in the sixth edition was: "If asked the two most important things, I should say, six weeks and a good big bottle of paregoric." And even this does not appear in the ninth edition.

His notes for the second edition contain the following:

> Through the pernicious influence of the daily press appendicitis has become a fad, and it has become an important duty of the physician to stand between the patient and the knife.

But this is altered in the third edition to read "the physician has often to deal with patients who have a sort of fixed idea that they have the disease." In the eighth edition it is, "almost a fixed idea." Up to the eighth edition only this was followed by:

> The worst cases of this class which I have seen have been in members of our profession, and I know of at least one instance in which a perfectly normal appendix was removed. The question really has its ludicrous side. A well-known physician in a Western city having one night a bellyache, and feeling convinced that his appendix had perforated, summoned a surgeon, who quickly removed the supposed offender!

Not that he belittled the importance of surgical intervention in appendicitis. In the first edition he says: "To the surgeon we owe invaluable lessons relating to diagnosis and above all to treatment." In the second he adds:

> So impressed am I by the fact that we physicians lose lives by temporizing with

certain cases of appendicitis, that I prefer, in hospital work, to have the suspected cases admitted directly to the surgical side.

Finally, he develops this into:

> The general practitioner does well to remember, whether his leanings be toward the conservative or the radical methods of treatment, that the surgeon is often called too late, never too early.

In the working copy of the third edition he has the following note to be added on the treatment of pulmonary hemorrhage:

> Rest of the body and peace of the mind —"quies, securitas, silentium" of Aretaeus—should be secured. . . . Aretaeus says that in haemoptysis the patient despairs from the first, but in consumption he flatters himself with hopes of recovery to the last.

In the fourth edition, however, this becomes: " . . . As Aretaeus remarks, in haemoptysis the patient despairs from the first, and needs to be strongly reassured."

Occasionally a note is made but not used till later on. In the working copy of the first edition he writes: "Oct. '92. . . . During my absence in St. Paul one of my residents tapped a malarial spleen in the ward. The man bled to death. See autopsy of above date." But not until the sixth edition was this worked in as "Fatal haemorrhage has followed the exploratory puncture of an enlarged malarial spleen."

In the third edition he jots down the two following notes, but does not use them:

> When the crisis (in pneumonia) has occurred the patient may be let alone, according to Aph. XX of Hippocrates. . . .
>
> Hippocrates noted (Aph. XLIV) the favourable character of pure white pus.

Nor does he use the following, which is found in the working copy of the eighth edition, under tuberculosis of the testes: "A useful clinical axiom is that one of the two duties of a consultant is to examine the testes—the other is to make a rectal examination."

In his working copy of the eighth he crosses out the definition of Hysteria and substitutes:

> A pathological condition in certain persons, manifesting itself by symptoms which it is possible to reproduce by suggestion, and which are curable by persuasion (Babinski). No definition of hysteria is entirely satisfactory in the present state of our knowledge, but the rich experience of the war has favoured the view here adopted.

But in the ninth edition this was greatly condensed.

The chapter on Tuberculosis was rewritten and expanded more perhaps than any other in the book. It was a favourite subject with him. The famous parallel with the parable of the Sower was made from the first: "There are tissue soils in which the bacilli are, in all probability, killed at once—*the seed has fallen by the way-side.* There are others . . . the seed has fallen upon stony ground." In the eighth edition he introduces this with the deprecatory remark "though somewhat hackneyed."

Speaking of dyspnea in tuberculosis (first ed.) he says:

> A degree of dyspnoea leading to cyanosis is almost unknown, apart from extensive invasion of the sound portions by miliary tubercle. One reason why there is so little shortness of breath in phthisis is that there is always a mild grade of anaemia, and the diminished lung space is sufficient to supply oxygen to the reduced number of blood corpuscles.

Opposite to this he has scribbled, "Rather mystical, Dock says," and the "one reason why" thenceforward disappeared.

In the working copy of the third edition he adds the note "'Captain of the Men of Death,' as Bunyan calls it." In the section on pneumonia he brings it in again: "It has become 'Captain of the Men of Death,' to use the phrase applied by John Bunyan to consumption." Cushing tells how Osler made play with the phrase at the British Congress on Tuberculosis—

> The captain had nevertheless been reduced to a lieutenant, and would soon be reduced to the ranks, though it was almost too much to expect that he would actually be drummed completely out of the regiment.

His alterations in the chapter on Gout are worth noting. In the first three editions he wrote:

> Patients with chronic gout may show remarkable mental and even bodily vigour. Certain of the most distinguished members of our profession have been terrible sufferers from the disease, notably the elder Scaliger, Jerome Cardan and Sydenham, whose statement that "more wise men than fools are victims of the affection" still holds good.

In the third edition he pencilled a correction to make this read " . . . Sydenham remarks that more wise men than fools are victims." But no change is actually made in the passage until the ninth edition, and then it reads: "The statement of the latter, however, that 'more wise men than fools are victims' of the affection, does not hold good to-day." Dr. Malloch thinks that the change was made because Sir William had come to realize that he himself was experiencing the "lispings," reference to which is made in all the editions: "a common gouty manifestation, upon which Duckworth has laid stress, is the occurrence of hot or itching feet at night. I notice in Plutarch that Strabo called this symptom 'the lisping of the gout'."

He adds to this in the eighth edition:

> The celebrated Pirckheimer wrote a famous "Apology for Gout" (1521) and there is much truth in what Podagra says: "For I take no pleasure in those hard, rough, rusticke, agresticke kind of people who never are at rest, but always exercise their bodies with hard labours, are ever moyling and toyling, do seldom or never give themselves to pleasure, do endure hunger, which are content with a slender diet."

It was in the third edition also that he first alluded to the remark of Aretaeus that someone who suffered from gout had, in the interval between attacks, won a race in the Olympic games.

It will probably have been noticed how many of the changes referred to have been made in the eighth edition.[8] Fresh scientific work had to be incorporated, of course, but he seems to have felt that he should also enlarge his historical references. There is the history of diabetes mellitus, for instance:

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[8] In a note at the beginning of the eighth edition working copy, Dr. McCrae refers to Sir William's method of preparing a new edition:

"The notes here do not constitute by any means all the changes and additions which he made. Sections which were to be materially changed were rewritten and not put in these copies. The publishers supplied the pages pasted on large blank sheets, on which the alterations and additions were placed. In this revision certain sections were assigned to me and in these Sir William made very few changes."

> The disease was known to Celsus. Aretaeus first used the term diabetes, calling it a wonderful affection "melting down the flesh and limbs into urine." He suggested that the disease got its name from the Greek word signifying a syphon. Willis in the seventeenth century gave a good description and recognized the sweetness of the urine "as if there has been sugar and honey in it." Dobson in 1776 demonstrated the presence of sugar, and Rollo in 1797 wrote an admirable account and recommended the use of a meat diet. The modern study of the disease dates from Claude Bernard's demonstration of the glycogenic function of the liver in 1857.

Could there be a more admirably compact sketch? Unless it is the history of aneurism, also in the eighth:

> Galen knew external aneurism well, and in the second century A.D., Antyllus devised his operation of incising and emptying the sac between ligatures. Internal aneurism was recognized by Fernelius in the 16th century, and Vesalius was very familiar with the disease. Ambroise Paré suggested the relation of aneurism to syphilis, which was insisted upon in the great monograph of Lancisi in 1728. Morgagni in 1761 described very fully the symptoms and morbid anatomy. The modern views date from the studies of Helmstedter and Koster, who showed that the primary change was in the media. The researches of Eppinger, Thoma, and Welch emphasized the importance of these changes in the media, particularly as brought about by syphilis.

It is rather remarkable that he should have refrained so long from making any reference to the history of syphilis. It is found for the first time in the eighth, but is fuller than any of the others, and is too long for quotation here..

Some of the other historical accounts are enlarged, tuberculosis, for example, and hookworm disease. Poliomyelitis is expanded into a section by itself, with a historical account; it loses the following, however:

> It has been attributed to cold, overexertion and to falls. From the days of Mephibosheth infantile paralysis has been attributed to the carelessness of nurses in letting the children fall.

"Faith Healing" in neurasthenia becomes "Psychotherapy," but although he introduces a short note on suggestion and the psychoanalytic method of Freud he fortunately retains the fine, almost liturgical sentences of the earlier editions, beginning, "In all ages, and in all lands, the prayer of faith, to use the words of St. James, has healed the sick. . . . "

The eighth edition really ran into two editions, as he had time between printings to make several additions and alterations, which are mentioned in a special preface. But the eighth also saw the last of a good many allusions. Some of these are as follows:

> Since 1873, when I saw a case of this kind in Traube's clinic, and heard his remarks on the subject, I have seen a number of instances of the kind (purulent pleurisy) and can corroborate his statement as to the favourable termination of many of them. . . .
>
> In one remarkable case which I saw on several occasions with Blackader of Montreal (Chronic pleurisy). . . .
>
> In Polk's case (malformation of the kidney) the organ was removed under the belief that it was a floating kidney.
>
> Oliver Appleton, the first reported American bleeder, who died at an advanced age of haemorrhage from a bed sore and from the urethra. . . .

> A distinguished gynaecologist who had had writer's cramp 20 years before, and who had tried all sorts of treatment, still has it in aggravated form (1910).

All these are scored out in his working copy. But he has retained to the very end the reference to the description of an attack of paroxysmal hemoglobinuria by "Druitt, the author of the well-known surgical Vade-mecum." Osler could make many names live, but even he could not preserve from oblivion a work which has been so completely supplanted by modern surgical textbooks.

He received very many letters about the book, and several of these are pasted into his copies. Sometimes they were laudatory, sometimes critical. Some offered advice as to re-arrangement of the chapters. Some were indignant at what he had said. Many sent notes of cases from their own experience. There is no record of his replies, but sometimes the effect of the suggestions is to be seen in a change in the book, as in the case of the following letter from Dr. A. C. Abbott:

> Dear Father-in-law: Pardon the liberty, but if you are getting out a new edition of your "quiz compend" you had better correct the statement that Kartulis has produced dysentery in *dogs* by injections of his cultures of amoeba dysenteriae. Unless he has done something since his work in 1891 that I have not seen, he was at that time of the opinion that *cats* were the only suitable animals. . . .

In the next edition "cats" was duly substituted.

Another letter responsible for an alteration was from Dr. A. B. Ball, in which he asked if the story told in the first two editions of the man with the inordinate appetite who was paid to stay away from eating houses whose meals allowed of bread *ad lib.*, was not really the case quoted by Trousseau; and saying that if this was so, it was a case of diabetes insipidus, not mellitus, as stated by Osler.

A letter from Sir. Wm. T. Gairdner, however, did not receive the acknowledgement (in the textbook) that it seems to have deserved.

> Like all great and generous hearts you won't be above receiving graciously some very small criticisms on one or two places of your third edition, and I can most confidently say that it is only from wishing that noble work to be as perfect as possible that I submit such clerical trivialities to you. I have been somewhat carefully going over pp. 699–700 with the view of lecturing on acute and malignant endocarditis (where as an authority you stand unquestioned and alone) and I find the following points apparently in need of amendment.
>
> (1) P. 699, 1. 10—"lethal influences which *they* normally exert." I confess I don't understand this sentence in its actual content at all; and I suppose there is something wrong. Who are "they," and what are the "lethal" influences which are supposed to be "reduced" if "lethal" is not a misprint? Can it mean lethal as regards the microorganisms? In short, I cannot make out what it means.
>
> (2) P. 700, 1. 21—"with which simple endocarditis is not infrequently complicated." The meaning, I think, is *not* endocarditis complicated with the fevers, but vice versa; in this case it should be "associated" or "found as a complication," to make the meaning quite unequivocal.

The sentence criticized in (1) was:

> Possibly it is nothing in the disease itself, but simply an altered state of the fluid media—the reduction perhaps of the lethal influences which they normally

exert, permitting the invasion of the blood by certain microorganisms.

No notice seems to have been taken of these suggestions. In the ninth edition the section is so remodelled that the sentences criticized disappear.

Some of the criticisms were themselves open to question, as in the case of the following letter from a recent graduate (Oct. 15, 1896), who, after pointing out several minor slips, misprints, etc. tells how in an examination he quoted Osler to the effect that tricuspid stenosis was chiefly interesting because it formed one of the most interesting complications of mitral stenosis:

> I happened to say this to Professor G. during my exam. and he smiled a very sarcastic smile when he replied that it was very curious that the presence of tricuspid incompetence was on the contrary of very favourable omen in mitral stenosis.

In a long letter Dr. A. K. Fisk of Denver defends himself on the subject of typhoid fever. He had been criticised by Osler at the Washington meeting of Physicians in '94:

> When I read a paper on the treatment of typhoid fever, at which time you strongly assailed my position, and after asserting that I was speaking of a disease which was not typhoid fever at all, but was malaria, you proceeded to "do me up." As this was my first appearance and I was a stranger to most of the men present, and as I was a western practitioner not having the extensive running gear of an eastern hospital back of me, I contented myself with a simple reassertion of my belief that I did know what I was talking about, and that I was talking about typhoid fever and not malaria.

The letter had nothing to do with the textbook directly, but it is to be noticed that the reference made to his name in the second and third editions, is omitted in later editions:

> There are cases described in which the chief features of the disease have been present without the existence of fever. . . . No instance of the kind has come under my observation. Fisk of Denver has met with it.

He had some correspondence over the term "bradycardia." In the first six editions he had the heading "Slow Heart—Brachycardia (Bradycardia)." From then on "bradycardia" alone was used, although he had employed it before in the sentence "bradycardia and tachycardia may alternate" (in diphtheria). There are two letters in the third edition on the point, one from H. B. Camac to Prof. W. A. Lamberton, and the latter's reply, in which it is pointed out that if a sluggish pulse, with low rate of movement is meant, the Greek root would be *bradus*. But if a small number of movements in a given time, then *brachus* would convey the meaning. Sir William evidently thought that the former best carried his sense.

Several cuttings from journals are kept. The following was taken from the *Journal of Osteopathy*, and is entitled "The Use of Drugs." It begins:

> The Osteopathist believes that the internal administration of drugs is useless. . . . It is therefore with very great pleasure that he finds his heavy contention [sic] . . . supported by one of the best and most recent of the regular, orthodox, allopathic medical books. . . . Osler deprecates the drugging propensities of the profession, and has reached the great success attained by him, upon hydrotherapy, hygienic surroundings, etc.
>
> How much better he might have done under Osteopathic practice, he, perhaps, will never know.

Not many "allopaths" receive such tributes as that!

A letter from Dr. F. C. Shattuck (inserted in the fourth edition) asks: "For a particular reason I want to ask you why you have left out in subsequent editions the remark on the high mortality of pneumonia in the London Temperance Hospital"; the remark being:

> It would be too much like hoisting the teetotaller with his own petard to attribute the high rate of mortality at the London Temperance Hospital—15 to 16% during the past 20 years—to failure to employ alcohol.

But whether Dr. Shattuck got his reason, or what it was, is not recorded.

The following extract from a letter from a well-known Boston physician is worth giving, although not dealing chiefly with the textbook. It has some comments on the book to begin with, and then goes on:

> I have heard you are to give a smoke talk here. Now for God's sake don't talk about the glories of the past in Boston. You did much harm before and we have been swelling out our chests since. You of all men know that the only way to advance medical science is by following scientific methods. Our men don't know that Jackson, Bigelow and Wyman became great because they had different ideas and different methods. Our men consider material prosperity synonymous with greatness. You would do so much good if you would impress upon the young men here that they must know things. But it would probably do no good for they do not know that the pursuit of knowledge leads to material prosperity. On the whole you were probably right in talking about the glories of the past.

Dr. Sam. Brickner writes him as to the origin of "taenia solium"; the derivation given by Sir William he says, is not entirely correct:

> *Taenia* is a feminine Latin noun borrowed from the Greek. If *solium* is a corruption of *solus* we have the anomaly of a neuter adjective modifying a feminine noun. No Latin dictionary, however, gives this corrupt form of *solium*, and I have taken the trouble to look elsewhere.
>
> I find *solium*, a noun, probably derived from *sedeo*, or related to *sella*, signifying a "seat" or a "tub for bathing." So this may be the word which is used in the accusative singular, with an implied reference to the rectum, or to the acquisition of the parasite by the use of the tub.
>
> It is well known that the Mediterranean peoples suffered from the tapeworm, and this fact makes possible, if not probable, the derivation of *solium* from Σολιοι the inhabitants of Soli, a city in Cyprus. A corrupt genitive might easily give us *Σολιυμ* for *Σολιων*.

He seldom gives references to his sources. Here and there in the earlier editions some occur, but they usually disappear in the later. He has, however, from the third edition on, a footnote dealing with some of the literature on malaria:

> For a full consideration of the malaria problem as it has presented itself to us in Baltimore during the past 9 years, the reader is referred to the monograph of Thayer and Hewetson . . . and to Thayer's lectures on the Malarial Fevers, N. Y. 1897.

In the ninth edition this reads:

> The following references to work on malaria which has been done in connection with the Hopkins clinic, chiefly under the supervision of Professor Thayer, may be of interest. . . .

He also repeats throughout a paragraph on the literature on vaccination.

References to sources of classical allusions occur more often, but even these are gradually removed. Montaigne's description of his "stone" ("Essays, Book III, 13") in the first eight editions, is taken out in the ninth edition. Montaigne is quoted again in a footnote in the same section (nephrolithiasis):

> Some of these (mineral waters), if we judge by the laudatory reports, are as potent as the waters of Corsena, declared by Montaigne to be "powerful enough to break stones."

But this is questioned in a letter from Dr. Horace Gray, who asks for information as to "Corsena":

> Corsena has hidden its face after a search through the indices to seven different editions of Montaigne, through the Century and two other atlases, two gazetteers, Bayle's Dictionary, and Smith's Dictionary of Antiquities.

It is true that it is not in the modern gazetteers, but when one goes to the *fountain head* of hydrotherapy, the great "De Balneis" (Venice, 1553), one finds Corsena described as in the vicinity of Lucca. And Montaigne, in his "Journeys into Italy" (Complete Works, ed. Hazlitt, 1888, p. 628), has a long account of it:

> At Corsena, besides the principal bath, I saw a place lying further down the hill, where the water is collected from different springs into little channels, where it is much easier got at. . . . Each of these has a name inscribed upon it, in reference to its supposed effect; one is the Savoury, another the Sweet, another the Amorous, a fourth the Crowned, a fifth the despairing one, and so on.

Note: I owe a great deal to Dr. W. W. Francis, Librarian of the Osler Library, for his encouragement and assistance in preparing this paper.

THOMAS HOLLEY CHIVERS, M.D

"THE WILD MAZEPPA OF LETTERS"

By ROBERT L. PITFIELD, M.D.

PHILADELPHIA

A LARGE marble urn, draped after the fashion of long ago, stands in the town cemetery of Decatur, Georgia, above the grave of a forgotten poet. On a cubical of stone on which the urn stands is this inscription:

Here Lie the Remains of
THOMAS HOLLEY CHIVERS, M.D.
Of His Excellence
As a Lyric Poet
His works will remain a Monument
for Ages
After this temporary tribute of love
Is in his dust forgotten.
This soul winged its flight Heavenward
December 19th, 1858
* Aged 52 Years

This mortuary urn may be taken as the chief motif of this essay, for it symbolizes death, the constant recurring theme of the poet through most of his work. Chivers was a most singular man, eccentric and in many ways uncouth. To many of his neighbors in Georgia, he appeared to be mad. The ordinary man in the street, on reading his verses, would say that there was no question about it and would unhesitatingly subscribe to that view. He was not as mad as Blake but very much like him in many ways. Not only did he, like that celebrated English poet and artist, write mystic poetry, but he had the same sort of unbridled imagination soaring in and out of heaven, seeing all the company of celestial regions, communing with angels and other spirits. He saw visions, wrote the same kind of rhythmic verse, and became in after years something of an artist, and like Blake adopted Swedenborgianism later in life.

He was born in a sparsely settled portion of Georgia in 1809. His father came of good Virginia stock, his mother, a Miss Digby, is said to have descended from an old English family of that name. Little more is known of the ancestry of this frontier poet; no one appears to have distinguished himself in the arts or letters, among the forebears of this raw rhymster of the live oaks and savannahs. Nothing is known of their mental abilities or health. In considering the man's life, it must be borne in mind that he was never in want and never suffered pecuniary worries and privations that hampered and tortured so many men of his profession. His father, Col. Robert Chivers, was a wealthy planter and mill owner. His son had certain lyric powers that cannot be denied. He wrote voluminously, his out-pourings were very often huge affairs of eighty or more stanzas. He wrote much of celestial matters, he ransacked all of heaven to procure poetical materials for his works, but he was far below his famous English prototype in sheer mental powers. All medical men will agree that he was somewhat mentally unbalanced, of a highly emotional nature and religious to a bigoted degree. Born in a strict Baptist family he early adopted their narrow and stern views in every particular. The Southern Baptists of that period were of a very bigoted, self-satisfied kind. Like Dr. Beddoes, another doctor poet, he was obsessed with death; there is hardly a poem of his in which he does not muse upon that dreary subject. Like Blake and Swedenborg he was wholly an introvert. Being highly sensitive his emotions were very easily excited. Damon in his clever biography of him says:

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*Shortly before he died Chivers antedated the year of his birth two years, making it 1807 instead of 1809 as is accepted as his true birth year. He did this to make him older than Poe, on account of the matter of priority of publication, etc. The gravestone inscription states that he was fifty-two years old instead of forty-nine which was his correct age.

> He had his eyes turned inward by means of fidelity to psychological fact, he was blindly reaching upward for the tendencies afloat in the atmosphere of the new world. Much of the fruit he gathered was green, some of it was rotten, but that was the fault of his intelligence and not his genius.

Later he continues:—"We must pick and choose in his rare volumes, much there is trash, but amongst the trash are a few amazing specimens of rare species that deserve salvation."

Born on a plantation near Oaky Grove, little is known of his early education. He lived in a handsome cottage surrounded by finely kept lawns, tall trees and gravel walks. His childhood was happy; plenty of slaves worked the fields and served in the home. They wanted nothing, life flowed easily and placidly along under the live oaks and beside slow moving rivers. It is more than likely that in Chivers' early childhood he acquired his marked rhythmic gifts from hearing the negroes chant their spirituals in field and kitchen. He loved his parents dearly, especially his mother, and never wearied of writing laudatory poems in her tribute. He was probably like Poe, an indulged spoiled boy. He was brought up to consider himself an elegant Southern gentleman with all that such a social station entails; he was proud and wholly Southern in his views always, especially in regards to slavery. As a boy he saw visions, as did Blake, and later in life wrote of his experiences in one of them in Davis' weekly magazine *The Univercoelum*, which was conducted by Davis, a well-known spiritualist in the early days of this country. This is quoted in part to appraise the extent of his mental disorder and his high pitched religious emotionalism:

> I had been sick but was now convalescent—(the Elysium of this poor life) and was lying in bed in the middle of the room, reading the Psalms of David, when this vision appeared to me. I knew that God had couched my eyes to see it, for with my naked eyes I knew that I could not see a spirit; and, for fear that I was deceived or, that it might be a mere delusion—I placed my hands over my eyes, but the glorious vision still appeared to me as beautiful as before. Still doubting the Truth of the Appearance—thinking, perhaps that I might be deceived—I called my mother into the room and crying out in the ecstacy of delight, I said: "Mother, look up there on the wall at the beautiful angels singing and playing on their harps." At which she looked up intently for sometime but could discern nothing. She then said: "My dear, you are distracted! I can see nothing." "Now," said I, "they are gone. And they went away just as I told you." When I turned my face toward the right side of the room, I saw a fountain of crystal

> water running down the wall and breaking into a beautiful musical, cooling and purifying cascade. . . . I told her to hold her hand under the glass and I saw the living crystal water splash down into the palm of her hand.

Such an experience would qualify Chivers to membership in that singular band called the illuminati or vision seers.

During Chivers' boyhood religious rivalry and even strife between the two predominant religious sects, Methodists and Baptists, was rampant in Georgia. The conflict was widespread and rancorous.

> The Methodists held their camp meetings, spectacular, orgiastic and deeply emotional; the Baptists were more dignified, and duller. Conversion and death were the two great events in the lives of those people, and as infant mortality was exceedingly high, both sects specialized in edifying death-bed scenes and the black pomp of funerals.

America was raw, uncouth, unlettered, culture was crude and so colored with sentimentalism that it was a matter of detestation on the part of visiting foreigners. Life was a melodrama, highly colored and passionate. Prejudices ruled men rather than reason. Damon says:

> Crying out that America had no bards, everybody rushed into print. A thousand mocking birds struck up imitating a thousand nightingales whose haunt did not happen to be America—into each other's albums youths and maidens recorded (in impeccable copper script) undying sentiments and attachments of an ardour which would startle today's flaming youth.

That was the mental atmosphere into which this starry child Chivers was born. We see the makings of a poet with sentimentality on every hand, with the blacks chanting their melodies with admirable rhythm amid green meadows, groves, hills and streams. With a religious tension and conviction that was pathological, or at least most unwholesome, equipped with an impressionable high strung system far from balanced, the conditions were just the kind to make him the sort of lyrist he became. It was easy to woo the Muse, such as she was in the plantations of Georgia in the nineteenth century. His mind was, no doubt, deeply stirred and swayed by his religious teachers. The Baptist ministers of his day were highly emotional, unbalanced men. Dressed in dolorous black, gaunt, lean, long haired, fanatical, often melodramatic, they moved multitudes enormously, feeding them the kind of religious pap they hungered for. Every gesture was intensely theatrical, their strident voices as they related in intimate detail accounts of edifying death-bed scenes, shook with emotion. Some claimed to have looked unto hell and to have witnessed the torments of the unconverted. Sin, death, conversion, salvation and damnation were the themes of their weird discourses. They dealt little with Divine Love, the beatitudes, spiritual grace, service and Christian beauty. Probably, most of their texts were taken from the Book of Revelations. They wanted to make sinners quake in their shoes and this they often did. Their victims groaned and wept. Many were seized with convulsions or swooned or fell into hysterical trances. Fear was the great weapon of these preachers against sin; love was not preached or especially commended. Sexual excitement was rampant, it so prevailed that it was difficult for the onlooker to note when religious ardour left off and was succeeded by libidinousness. Such emotional experiences profoundly moved this impressional, imaginative boy. These unbridled preachers were his instructors in that uncouth school of religion. Once Georgia had been favored with visits by great and sound preachers, the Wesleys and Whitfield. The good work that they did in that benighted region cannot be adequately told. The boy believed all that he heard, his parents so believed, that was enough for him; he held to those stern, adamant teachings throughout his life, except that late in his career he forsook the Baptist faith for Swedenborgianism. He abandoned all levity, life was always a very serious matter and yet he made much of his opportunities.

Many medical men have observed that the abnormal and low-minded have an acute sense of the rhythmical. Blake exhibited it, so did Poe, who was distinctly pathological. It is said to be a sign of dyspituitarism. Lower in the scale of mentality, poor Blind Tom, the super idiot, displayed marvelous powers of performing rhythmic music. I consider that this acute sense of the rhythmic in Chivers was a symptom of his abnormal mind. Very often it was entirely original in its form.

All his life he lived in a Paradise peopled with angels and peris who constantly communed with him. Damon says: "Hell in his writings was only a literary convention, while heaven was more real to him than Georgia." He was so sure of heaven that he little considered hell.

When but hardly more than a boy he married Angeline. One child was born to the couple. For some time they lived in married bliss. Chivers wrote a poem to his mate, so happy and content was he. Then some ugly rumors were bruited abroad in the town; according to Chivers they were wholly without foundation. One night his dear wife stole from his home with her child; Chivers never saw them again, nor did he forgive the errant woman. It is quite likely that the wife seized upon the rumors as an excuse to escape from an intolerable marriage relation; no one now knows, it is easy to surmise that such was the case. The episode upset him tremendously. Later he wrote a long, dreary poem recounting his wrongs and sorrows, "The Path of Sorrow."

While but a boy he witnessed the death of a younger sister. All the bedside partings and agonies were according to the prevailing religious fashions of that time in Georgia, and most edifying to all of the family. They all believed that all the griefs that they experienced in this life would be more than compensated for in the life to come; bliss throughout eternity made deathbed partings more endurable. This harrowing scene moved this uncouth youth to poetry. It gave him the outlet that he needed for his pent emotions. These verses are so extravagant, so lacking in good taste and turgid with emotion and a senseless imagery that they must be in part quoted in the study of this abnormal character. They serve not only as an index to the nature of his disordered mind but to the kind of cheap, clap-trap sentimentality that was indulged in by all of his family and friends. The Introductory lines put the reader on his guard as to what to expect and to prepare him for the shocking horrors of the latter parts of the poem. Witness the scene made all the more terrible by these over-wrought people.

Oh! I shall never forget that eye
That dying eye! which closed upon her sight,
yea
Closed communion with the world! I heard her
Bid her mother come and see her last, Oh!
Wisdom of eternity! exalt my
Thought to tell of grief and woe—expand my
Soul to realize the dying thrill. Great
God! is this benevolence in nature's
Laws? God of truth! upon her cheek I saw
The shadow of an inward strife and on
Her breast I saw comparisoned, both life
And death—the struggle was to marry death
To immortality . . .
Upon the icy breast of love
I saw the lily and the rose
Stand at intervals, then fade away, like
Candles glimmering in the midnight glory
Of a morn that has no eve beyond it!

Of course, the poor youth was thrilled, he gloried in such scenes. He continued always morbidly to do so, it was more than a thrill, it was a rapture which he thought divine and most seemly to witness. The poem is a long one full of mixed metaphors and preposterous description. He related all that the poor girl was supposed to see. He confesses that he could not visualize all of it. He continues in morbid ejaculations:

> . . . There she saw a holy
> Harp! She saw a harp, Oh! dying
> sister
> How can I emblem that I never saw,
> how
> Can a brother's words depict that
> which he
> Only saw reflected from the mirror
> Of your infant soul? Yes, she saw
> a harp!

Harps, among other heavenly emblems, played a great role in the symbolism of the distorted fanatics of those days. In that "Rococo period in American history," according to Damon, people lived and moved by symbols, flaming stars, tombs, wreaths, doves, anchors, weeping willows and crosses. Thus they expressed the romantic that was in them; and such emblems were very often used in expressing their uncouth and extravagant religious worship and faith. When a pioneer or frontier people suddenly assume or affect culture, the result is often very grotesque; it was so among these good folk of Georgia.

Very downcast and with a sense of having been terribly wronged the disconsolate youth who still loved his runaway wife and child began the study of medicine in the Transylvania University in Kentucky. He did this largely to get away from the surroundings of his home and idle tongues which wagged none to kindly. It is surmised that he had received his early education in a good Georgia preparatory school and had been tutored by Mr. Thomas Lacey, for to him he wrote a laudatory ode. He is said to have been widely educated and to have had a good knowledge of Hebrew. He never practiced his profession much, he was too introverted and self-centered. While in the medical school he wrote many poems, the chief of which is his "Path of Sorrow." His griefs and sense of wrong were rendered more poignant when he learned that his wife was accepting attentions from another man. He published this long poem at his own expense, as he did all of his work except magazine poems. It is not recorded that he ever received a penny for any of his efforts. Yet this "Wild Mazeppa of Letters," as Simms called him, was to earn wide reputation, more notorious than noted. Today collectors gather up fragments of his work with avidity. Much of it is cared for in large university libraries. Harvard has a number of his works deposited by none other than Lowell. General Sherman's troops on their famous march to the sea devastated Chivers' old home, destroying manuscripts and books. Much has been lost by the ruthless rummaging of these vandals A little of his poetry of those college days was cheerful, for he burst into song with "Georgia Waters," perhaps at the instigation of friends, it is as commonplace as a college song, platitudinous mostly, with conventional rhymes. In it he displays his extraordinary rhythmic powers, full of lilt and alliteration, yet it does not ascend above the commonplace. But it reveals a lifting of the depression that weighed upon him in the early twenties. After he was graduated he mounted a horse and set forth on a long excursion among the Indians. Little is known of what happened on that journey, what depressions and complexes afflicted his mind. He wrote some poems about what he saw. It is more than probable that his mental health was low; his religious morbidity continues in all of the works. It is possible that he verged very close to a dementia precox, he was of the age in which it is wont to appear, and the hard study in the medical school exhausted, somewhat, his nervous reserve. He was intoxicated with God; he confesses this in his poetry. But he ever recurs to his favorite subject, death; this was his theme in most of his work always. After graduating he wrote "The Raising of Tabitha." He employed his newly acquired medical knowledge in his descriptions of the scene. The dear girl is restored to life by Christ in a very realistic manner in this poem. It is grotesque and rather painful reading and most photographic. He had certain graphic powers, undeniably. In the poem the cold corpse slowly comes back to life, the stiff, frigid fingers become flexible, the pulse returns, yet he declares that the wrists were pulseless.

Our poet was so absorbed in his own inward visions and introspections that he little interpreted the beauties of nature which lay most bountifully on every hand. He uses some of them in his descriptions to adorn his lines. But he rarely at this period attempted any such charming pastorals as Blake's "Songs of Innocence" or Keats "I Stood Tip-Toe on a Little Hill," written by that poet while a medical student. Chivers was never naive or charming, he was too self-absorbed and overwhelmed with the awfulness of life to be so. If he employed any scene from nature it was always bound up with some morbid, moral or supernatural relation. The reader can find little pleasure in reading them. Herbert's poems are as deeply religious as any of Chivers are, but they are charmingly simple and lovely with all their expressions of faith and Divine love. Indeed they are true songs; Chivers had not his art nor his fine feelings, he rarely was fine. "The Soaring Swan" is wholly an exception to this, it is really a notable poem, full of stately music, but he could not keep his bird out of heaven, he had him fly a few turns about in that celestial place at the apex of his flight. Shakespeare exercised far more restraint in his song "Hark! Hark! the Lark at Heaven's Gate Sings." This is sheer loveliness, while it is restrained yet joyous abandon makes it most charming. This poem of Chivers is wholly sane and in better taste than most of his other essays in poesy. A few lines from it are given to show something of its quality and its exhalted temper.

While in the welkin of the skies, the clouds,
Like undulating isles spread out upon
The ocean of eternity, appear
In lawny prospect, like the sweets of some
Ambrosial grove whose incense waves to
heaven.
And far away they gather into floods
Of glory like the waves of sound that came
From ocean, when the wings of angels flew
To Salem with the music of the Lord.

He bids the bird take no second mate. Soon after this, however, he forsook that advice and married a Miss Hunt of Massachusetts. He was then twenty-eight years old and the bride but sixteen years. He lived for a time in various cities in the North, largely because of literary companionship, but settled at last in Georgia for the rest of his life. There was never any need to earn money and his life was the easy, comfortable existence of a Southern gentleman. Poetry was as much of an industry to him as it is an art to other poets. He wrote reams of it on long foolscap paper. This he sent to many editors, some accepted his effusions gladly, many others rejected them.

The poem "Lily Adair," resounding with jingling syllables, is so sentimental and commonplace that it has little appeal save to the unthinking persons who will be captivated by its tumult of light, almost meaningless, euphony. It is the prototype of many of Poe's verses (Anabelle Lee). He could not keep his new inamorata out of heaven, witness some of her flight upwards:

From her paradise Isles of the ocean
To the beautiful city of On
The mellifluent rivers of Goshen
My beautiful Lily is gone!
In her chariot of fire translated
Like Elijah she passed through the
air
To the City of God golden-gated
To the home of my Lily Adair
Of my star crowned Lily Adair
Of my God loved Lily Adair
Of my beautiful, dutiful Lily
Adair.

"Goshen" was introduced to rhyme with "ocean"; the same is true of "On," it was invented to rhyme with "gone." Poetry of this kind was much appreciated in those days, everything went that had a lilt and a swing; almost any kind of sense was fitted to the meter. It is on the same level as a college song but less coherent. Chivers defied the laws of physics very often, probably on the grounds of poetic license, witness:

Lofty piles of echoing thunder
Drowning all the stars in wonder . . .

This would be good poetry were it not that he piles up "thunder" like so much lumber. Damon thinks that Chivers anticipated Whitman by writing in long, irregular lines, imitating the regular, irregular sounds of the waves on the shore. Some of this physics and sense defying verse reads:

And there heard the loud thunders, rolled
off from the prows of the crystalline spheres
Break balmily against the white shore of my
panting soul, in utterance sublime.

Lamenting the death of his children he wrote in "Avalon":

Four little Angels killed by one cold death
To make God glad.

A notorious sex murder in Kentucky stirred the South, when a hair-brained wight named Beauchamp, a neurotic, killed Col. Sharpe on the insistence of a Miss Young who had been seduced by the colonel. Challenging the colonel to a duel with daggers, Beauchamp, on receiving the colonel's declination to that resort, murdered him. Of course, our high-minded poet felt called upon to write a melodrama in five acts, all in blank verse about this tragedy. This was never produced, but it was printed by Chivers. Later in life he wrote more plays that never saw the glitter of the footlights. Pure poetry was his forte, he thought, as well as his delight. He invented all sorts of rhythms and verse forms. Damon says of his work:

> Inspiration and technique are the twin wings on which every poet soars; both of Chivers' lacked many feathers. But occasionally in his eccentric flights, he shot high—much higher, I believe, than the world has ever realized.

At this period he was about thirty-three years of age, he planned many new poems on grander conceptions. He aspired to be a Milton and write epics. He made the acquaintance of Poe, then editor of *Graham's Magazine* in Philadelphia. This journal published many of his short poems but declined his long elegy "The Mighty Dead" on the ground that it was over long. It was made up of eighty-five, six-line stanzas. The manuscript was lost and remained so for years. Finally Chivers recovered it and published it in a volume entitled "Eonchs of Ruby." He coined the word "Eonchs" by substituting E for C in "conch" a pink sea shell common along Georgia beaches and in streams. This is one of his whimsicalities. Among others he coined a number of new words mostly because they were euphonious and suited his rhythms. Some have stuck in the language, notably "Labyrinthine." Thompson is usually credited with its coining. Of his "Mighty Dead," Damon says: "It is the best sustained of any of his poems." Again his judgment and sense of values is faulty, he includes Andrew Jackson and Felicia Hemans as of undying renown among the great heroes of this world.

His beloved daughter, Allegra Florence, died after a brief illness of typhoid fever. The poor father was so grief stricken and distressed that he was not able to give any medical aid to his beloved daughter; he was filled with remorse after her death because of this. She is said to have resembled her mother who was very beautiful. Most probably she had been named after Byron's illegitimate daughter, Allegra. The blow staggered him, staggered him into writing two elegies, chiefly to her whom he thought as "a living hymn sung to the glory of God." Of the first, "The Lost Pleiad," Damon says: "It is a terrible poem, an out-pouring of despair." Of course, the death scene was intimately described in horrid details, sunken eyes, cyanotic nails and fetid breath. He who wrote so fearsomely of death, which throughout his life had enthralled him, was to know him even more terribly, for "this fell sergeant was strict in his arrest." Three more of his daughters stricken, one after another, with a virulent form of typhoid succumbed in rapid succession. The shock and poignancy of the bereavements overwhelmed the poor parents. The shaken poet in stricken numbers pours out his woe in "Allegra Florence in Heaven." This is the second of his elegies to his children. Few if any poets have ever had this experience, none had so much grief to sing about. But after his darling daughters were swept from him by death, his wife presented him with three more children, two daughters and a son. They survived him. Nothing now is known of their careers. "Allegra Florence in Heaven" is very interesting to students of literature, for in this poem he uses the rhythm that he had invented and which he later declared in no amiable words had been stolen from him by Poe. "The Raven" is certainly written in this rhythm, we have Chivers' word for it. On the other hand, Prof. Damon emphatically declares that: "The Raven rhythm came not from 'Allegra' at all but from 'Isadore.' One stanza is quoted here:

> While the world lay round me sleeping
>   I alone for Isadore
> Patient vigils lonely keeping.
> Someone said to me while weeping;
> Why this grief for evermore?
> And I answered: "I am weeping
>   For my blessed Isadore.

That Chivers wrote and published his poems, "Isadore" and "Allegra Florence in Heaven" prior to the publication of the Raven is proved by the dates of publication or composition of these several poems. "Isadore" appeared in print in 1841. "Allegra Florence" was composed in December, 1842, "The Raven" was published in 1845 nearly three years after Chiver's poems were published. Poe greatly admired "Allegra Florence" and read it about the time of its publication. Damon wrote that "Nachoochee" was taken directly into Poe's "Ulalume." Chivers declared that Poe's idea of his poem "The Bells" was derived from his poem "The Mother's Lament on the Death of Her Child" which he wrote in 1842. Its first line reads:

> Funeral bells are tolling tolling

"Rhyme," says Damon, "led the poet into absurdities that no music could atone for." If Chivers had considered the maxim that it is but "a short step from the sublime to the ridiculous," he might not have written many of his awful stanzas, notably those to "Allegra Florence in Heaven." Damon says of one stanza: "what may be the vilest and most excruciating stanza he ever penned." That it is a prototype of "The Raven" leads me to produce it. Here is some of his woe:

> As an egg when broken never
>   Can be mended but must ever
> Be the same crushed egg forever—
> So shall this dark heart of mine
> Which tho broken, still is breaking,
> And shall never more cease aching,
> For the sleep which has no waking
> For the sleep that now is thine.

(Great wits are sure to madness near allied
And thin partitions do their bounds divide
. . . Dryden.)

But another of the stanzas is more clearly the rhythm of "The Raven." Poor man, he must indeed have felt the loss of his beautiful daughter keenly.

> Holy angels now are bending to receive thy soul ascending
> Up to heaven to joys unending, and to bliss which is divine;
> While thy pale, cold form is fading under Death's cold wings now shading
> Thee with gloom which is pervading, this poor, broken heart of mine!
> And as God doth lift the spirit up to heaven to inherit
> Those rewards which it doth merit, such as none have reaped before
> Thy dear father will tomorrow, lay thy body with deep sorrow,
> In the grave which is so narrow, there to rest for evermore.

Poe liked the echoing refrain of "evermore," it suited the rhythm and sense of "The Raven," so he borrowed it and made it "nevermore." Each stanza of his poem ends with it, adding greatly to the effectiveness of its weird appeal.

Rossetti, Swinburne and Kipling borrowed from Chivers. Elizabeth Browning, writing to Poe about his "Raven," declared that "All England rang with its music and that none other than Robert Browning, the author of Paracelsus was very much taken with its rhythm." At least in one high quarter in the literary world Chivers' invention was appreciated. Not only was the rhythm of "Isadore" and "Allegra Florence" used by Poe for his "Raven," but his "Ulalume" resembles Chivers' long poem "Nacoochee" very much indeed; he acknowledged that to Chivers he owed much. Edmund Gosse wrote: "Poe has proved himself to be the 'Piper of Hamelin' to all later English poets. From Tennyson to Austin Dobson there is hardly one whose verse music does not show traces of Poe's influence." Saintsbury called him "the greatest master of prosodiac effects that the United States has produced."

The poem "The Lost Pleiad," in spite of its obscurity in places and sheer ugliness, contains some fine flights and cadences, and the flow and discharge of ideas is musical and complete occasionally.

> The spirit's soul delighting face
> Was smothered in the soft embrace
> Of angels when they from the skies
> Leant down with their sweet melodies
> In rapturous joy to hail thee theirs,
> And by the keen light of the stars,
> Behold thee like the snow white Dove
> Ascending through the heavens above,
> And caught thee frantic with delight,
> And bore thee singing out of sight.

Any poet would be proud of these lines, their appeal is great and the sentiment natural and not over-spilled.

Around the grave of poor Allegra the frantic father planted four cedars:

> Four verdant angels round the head
> And feet of her who now is dead.
> Whose soul is in the heavens high
> With wings of evergreen out-spread,
> To emblem that which cannot die.

"Wings of evergreen" is atrocious; had he no sense of the fitness of things nor any taste? The most glaring of his deficiencies was a total lack of the sense of humor. This was fatal to the success of many of his poems. Another of his absurdities that even far-fetched poetic license cannot excuse is:

> Like the black wings of the Raven
> In the sun's glow
> On her neck from morn to eve
> Whiter than snow.

No doubt, he was grandiose and conceited enough to consider that he was a true prophet and interpreter of immortality. Comparing his rhapsodies and elegies with Browning's "La Sasiaz," is like comparing primers with Plato. He improved as he grew older, becoming more subdued and restrained. He read copiously, borrowing ideas and rhythms freely. He ceased mixing up Greek, Hebrew, Irish and Christian mythologies so carelessly. He had acquired some sobering culture.

Once Bayard Taylor visited Swinburne and in the course of his visit he mentioned the name of Chivers. At which Swinbourne exclaimed: "Oh! Chivers! Chivers!—if you know Chivers give me your hand." Stedman related that this pair used to repeat the strange stanzas at each other with shouts of delight. Damon says: "Swinburne found Chivers' rhythmic and alliterative stanzas very much to his liking."

Once Chivers wrote a charming little pastoral after the manner of Blake. His darling angels and other religious objects throng its lines. It is as good as many of the Songs of Innocence. The last verse is very pleasing:

> There little boy blue
> Blow aloud on your horn
> Songs as soft as the dew
> From the mountains of morn.

He was prevailed upon to write a Fourth of July oration one year. In it is revealed his narrow, intolerant views about another religious sect. It is so grandiose and exhibits such a pathological megalomania that it is worth reading as a curiosity. Witness the last of his grandiloquent peroration:

> "Let us, therefore, adopt the graphic motto inscribed on the GLORIOUS BANNER OF THE TRUE SONS OF AMERICA—AMERICA SHALL RULE AMERICA—for she is as beautiful to her friends as the Moon-illuminated Night adorned with many stars—but as terrible to her enemies as a day with ten thousand suns."

Next year he wrote a poem which he proposed to read, but it was so long that he contented himself with printing it instead. It contains twenty-nine stanzas of twelve lines each, and following each stanza is a chorus of eight lines. Damon says of this poem, "that in it anapests tumbled over themselves into paeons." This rhapsody fitted the occasion. It is filled with references to "the sun playing on his thunder harp; The Freeman's Thor-Hammer; the winged Phoenix of Liberty and the Orphic Evangels of the Angels." It is a monstrosity, yet it was much appreciated by the people of his day. But a few lines will give the tempo and the kind of sense that it conveyed. It, of course, has in it religious references.

> Thus eternities rose in fruitious
> sweet blossom
> Blazed out from its bud in new
> beauties alway,
> That Sweet Nosegay of Freedom which
> grows in Christ's bosom
> And fills the wide world with its
> fragrance today.

Poetry in long lines is easy to write because of the flexibility afforded the composer. The meter is easy to fit the words, and today such lyric forms are despised by poets and poetasters alike. It is out of fashion. Very few great poems have been written in long lines of lilting meter.

In September 1856 he was elected to the professorship of physiology and pathology in Oglethorpe College at Savannah. He declined the post, some would have it on the grounds of poor health. That he did so was sensible. He who could write long, alliterative elegies and a few plays was not in any way qualified to teach those abstruse and learned branches. Yet the trustees of that college thought him qualified. He could never have taught any subject in any institution, his thoughts were not ordered nor his thinking much disciplined.

Yet this Georgia sentimentalist invented a machine used in throwing silk in that industry and it was used considerably for a time. For it he received a silver cup at a Southern exposition.

In appearance he was strongly knit in frame, his face was made up of very rugged features, his brow was broad and massive, his nose long and his chin strong and positive. His mouth expressed cruel bigotry, his eyes were bold and staring. Damon thought they were sorrowful. To me, they are those of an abnormal-minded man, unafraid, uncompromising, bold and without the tenderness and sweetness that characterize a poet's gaze. There can be no doubt but that Chivers was a mystic, that was the order of his mind. Mystics are not always responsible for their utterances. Not understanding them, people often scorn them, yet they have played great roles in religious circles, founding new faiths or divisions of such. All of the Christian faiths have had them in their personnel. While he claimed to see celestial things, he never recorded that he peered past the terrific porter, into the North Gate of Heaven, as Blake constantly did. He was not restricted, however, to many, some of his bold writing would be held as profane. He had none of the magnetism of Blake. It must be assumed that he had no charm. His neighbors thought him insane, spoke of him as being "cracked." I have no doubt but that his actions were very singular and eccentric. At times he wrote rather savage letters to editors when they hinted that his poems were not worthy of publication.

Taken acutely ill on December 18, 1858, Chivers made his will and in a few hours died in the early morning of the 19th. That was the end of this queer man. His volumes of poetry and his tomb ornamented by a large mortuary urn with its extravagant inscription are the relics of him who worshipped beauty and wrote so fearfully of death throughout his life. Now

Soft on her lap her laureate son reclines . . .

A Danish poet, one Professor Gierlow, wrote a poem commemorating his death. It is said to be quite good.

Of the friendship with Poe, but passing mention can be made of their intercourse and the final controversy. Poe hoped to elicit Chivers' interest in his projects, in turn Chivers enjoyed conversations with his fellow poet. They met three times, on the first occasion Chivers had to help his friend home, he was so deeply in his cups. Poe had borrowed fifty dollars which never was paid. Poe not only freely adopted the rhythm of "Allegra Florence in Heaven" in his "Raven," but other rhythms also were taken. There are two sides to the controversy that arose. There can be no doubt but that the borrowing was mutual; Chivers obtained many ideas from Poe. To charge Poe with a misdemeanor is like accusing the singer of a popular song melody of theft. Nevertheless, Chivers raged at Poe and wrote letters to support his claims. Poe had before this written an offensive criticism of Chivers. It appeared in *Graham's Magazine*, of which Poe was editor for a time.

> Dr. Chivers, of New York, is at the same time one of the best and one of the worst poets in America. His productions affect one as a wild dream—strange, incongruous, full of images of more than Arabesque monstrosity, and snatches of sweet, unsustained song. Even his worst nonsense (some of it is horrible) has an indefinite charm of sentiment and melody. We can never be sure that there is any meaning in his words—neither can there be any meaning in our finest musical airs—but the effect is very similar in both. His figures of speech are metaphors run mad, and his grammar is often none at all. Yet there are fine individual passages to be found in the poems of Dr. Chivers.

Poe afterwards retracted much of this criticism; he learned that Chivers might become financially interested in

The Stylus which Poe planned to establish. But in the Southern magazines the controversy raged for some years. Friends of Chivers took up his cause and denounced Poe. Chivers himself wrote under the nom de plume of Fiat Justitia bitterly assailing poor Poe. But hearing of the sudden and unseemly death of Poe and reading Griswold's dastardly life of this unfortunate, Chivers seems to have had a change of heart and immediately began a life of his colleague. This never was finished. It was extravagantly dedicated to the spirit of Shelley.

Poets, it has been said, are half mad; if that is a needful qualification to write good poetry, then Chivers was in no wise lacking. He was hallucinatory, we have first-hand evidence of this, for his visions were as lucid as any that Blake experienced; on the other hand he was at times much depressed, and he brooded bitterly over his wrongs. His excursion on horse back, about which no one has recorded very much, started when he was depressed. He probably had a breakdown. His writings are morbid and his life-long infatuation with death and its somber trappings, leads one to suspect that this was pathological. In all of his works there is no display of nicely balanced judgment and sense of the appropriate. His thoughts were so disordered that often his poetry was little more than illogical jargon. He cannot be excused for his extravagances on the grounds of poetic license; there is a danger point always beyond which no true poet can ever pass; Chivers constantly did this. His emotional balance too was woefully distorted. I gather that his temper at times was violent and uncontrolled. Lack of inhibition is one of the cardinal signs of insanity. This Chivers displayed constantly in his verse. On the internal evidence of his poetry alone, the man in the street would never acquit him of madness. His art is crude, unrefined and over-emotional. It bears few tool marks of careful artistry. An essential of good poetry is evidence of restraint. To know what to leave out and to do it is a faculty that makes great art. Chivers exhibited little of this faculty, he simply overflowed unrestrainedly and always. He lacked sustained effort in most of his works; in his "Soaring Swan" he displays unsuspected powers in this faculty, which is an essential of all great poetry. His poems are "a succession of poetic excitements."

The reason why Chivers did not become a religious revivalist of a militant, morbid type, is, because he most probably found an outlet in poetry that he could not find to his liking in the ministry. It was well for the people of Georgia that he chose to write poetry. He must have been a difficult person many times. His work cannot be found in public libraries, nor are specimens of it contained in anthologies. Histories of American Literature make no mention of him. He enjoyed a vogue during his lifetime among his own people largely, now few know of him. Except among bibliophiles and other collectors his books are not freely found. Dr. Anderson in a recent sketch of Chivers says that seven or eight volumes of his works are to be found on the shelves of the British Museum. That fact speaks for their value. The Encyclopedia of American Biography devotes two pages to the life of this singular Georgian.

Of his private life, no one can authoritatively point a finger charging him with any moral irregularities. I believe the scandal in his early life to have no foundation in fact. Probably his eccentric behavior led him to be accused of wrong. He was a total abstainer as to alcohol and tobacco. Once he lectured Poe for his inebriate habits.

He had a wide influence in his day. Perhaps many were entertained and a few felt uplifted and solaced by his verse. He was accepted as a religious poet by some, and in spite of his morbidity and extravagances, as a prophet and soothsayer. He cannot have done any harm and perhaps did good.

> It is not what a man does that
> exhalts him
> But what man would do. (Browning.)

The writer owes much to "The Life of Thos. Holley Chivers" written by Professor Damon of Brown University and to other sources.

PHYSICAL DIAGNOSIS FROM THE TIME OF RÖNTGEN

By WILLIAM EGBERT ROBERTSON, M.D.

PHILADELPHIA

MEDICINE of the Ancients grew out of the folklore, tinged by the spiritual concepts of their time. We are prone to flatter ourselves that we have long since relegated this to the limbo of the past. Occasionally however, we are confronted by a situation which forces upon us a realization that human nature in the raw, so to speak, has not changed materially, despite the centuries which separate us from the cradle of civilization. The creed of the Doukhobors, or to return literally to our midst, the activities of the hex-doctors of Pennsylvania, furnish concrete instances. Witchcraft played a large part in our early Colonial history, and witch doctoring, an attempt to ward off malign influences, seems a natural corollary. The extent to which such weird beliefs may transport their victims, even in our own day and generation, and in our own State of Pennsylvania, was recently, and only too gruesomely forced upon us in a local series of morbid events, including murder. It is said of George Washington, that in his expense account for the year 1797, there appeared an item of $25.00, paid for one of his employees for a visit to a hex-doctor of Lebanon, Pa. Credulity and superstition have always been the very woof and warp of our fabric. Existing in larger measure among the uneducated, it is by no means confined to them. Indeed, up to the present time, the history of cults and isms has been espoused even more strongly by the literate than by the illiterate. It is this fundamental fact, apparently inherent in the human throughout the ages, which has been responsible for our halting progress. Our own profession is not exempt.

Traditions are sometimes noble, but they may exert malefic influences. Such may be said of Galen. Forceful and dogmatic, a peripatetic, whose wanderings increased his general fund of knowledge and information, he veritably became a tradition. Accepted as infallible by the church, authority took precedence over reason and judgment, as Vesalius found to his sorrow. Galen's influence dominated medicine for more than a thousand years. Dioscorides, a Greek Army Surgeon under Nero, the founder of materia medica, was the author of a work which was copied almost verbatim for sixteen hundred years. It is interesting to note too, that of the remedies he advocated, about ninety are still in use. To Aristotle, one of Plato's pupils, we are indebted for our first knowledge of the embryology of the chick; he noted the fetal heart sounds, named the aorta, practiced dissection, and described viviparous and oviparous generation. Despite these facts, medicine has grown very slowly, dominated for centuries by tradition, and throughout the ages, slowly shaking off the shackles of superstition, we have either ignored or bitterly combatted anything which savored of an innovation. It has seemed to me that medicine began to progress with the advent of the physicist: Galileo and Torricelli, Stephen Hales, the discovery of the gases, the work of John Mayow in this connection, and of Lavoisier. This feature in the growth of medicine as a science is an alluring one, but without special reference to chronology, I merely cite a few outstanding facts in support of my contention. Advances in the various aspects of medicine have not necessarily been made solely by members of our guild. Oliver Wendell Holmes made reference to this fact when he said we

> . . . learned from a Monk how to use antimony, from a Jesuit how to cure agues, from a Friar how to cut for stone, from a soldier how to treat gout, from a sailor how to keep off scurvy, from a postmaster how to sound the eustachian tube, from a dairy maid how to prevent smallpox, and from an old market woman, how to catch the itch insect. It borrowed acupuncture and the moxa from the Japanese heathen, and was taught the use of Lobelia by the American savage.

I might add, it was taught the value of digitalis by an old woman of Shropshire; it was a layman who was instrumental in persuading Rockefeller to found his institute. Behring, who developed antitoxin for diphtheria, was not a physician, nor was Pasteur, whose innovations in medicine were numerous. Holmes also said:

> There is nothing men will not do, there is nothing they have not done to recover their health and save their lives. They have submitted to be half drowned in water and half choked with gases, to be buried up to their chins in earth, to be scarred with hot irons like galley slaves, to be crimped with knives like codfish, to have needles thrust into their flesh, and bonfires kindled on their skin, to swallow all sorts of abominations, and to pay for all this, as if to be singed and scalded were a costly privilege, as if blisters were a blessing, and leeches a luxury. What more can be asked to prove their honesty and sincerity.

Emotionally, we still live in the past. Quackery is still prevalent. Even in Germany, toward which we have looked with awe almost amounting to reverence, because of her scientific achievements, post-war conditions have uncovered the primitive, and quackery and the cults flourish there to an extent hitherto unknown. Let us not regard our forebears with contempt. Amulets have not been discarded. Like coral, we flourish on the effete past, becoming atolls in the midst of a struggling mass. We may not have among us a Thessalus, a John of Gaddesden or a Bishop Berkeley, but when we soberly reflect upon the fear and intolerance prevalent today, the dominance of the war spirit, despite the horrors of war, religious intolerance, the cunning and low order of intelligence incidental to a political campaign, the character of our most widely read newspapers, periodicals and books, we cannot afford to be boastful. On the other side of the shield, however, is revealed the earnest seeker after truth. I have referred to the part played by physics in the uplift of medicine. An abiding interest in science never leads to blatancy. Science invites modesty and reverence; qualities alien to the quack in all walks of life and in all ages. Physical diagnosis implies a deeper insight. It is essentially an application of physical principles. Perhaps for this reason, its pioneers have been, for the most part, men of modest mien. No better exemplification of this thesis could be given than the developments which made their appearance toward the end of the nineteenth century; viz., the first purposeful attempt to employ phototherapy scientifically, the discovery of *x*-rays and radium.

Niels Ryberg Finsen, a Dane, an invalid all his life, born in the Faeroe Islands, but brought up in Iceland, was the pioneer light therapeutist in the modern sense. A Nobel Prize winner, perhaps his invalidism contributed to his lack of ostentation, but it did not abridge his industry. Wilhelm Konrad Röntgen, a few years later, gave *x*-rays to the world. Born in the Rhineland of a German farmer and a Dutch mother, he was educated in Holland. Later in life, he became successively, Professor of Physics at Strassburg, Giessen, Würzburg and München, and it was while at München, in 1895, in experimenting with a Crooke's tube, that he discovered a new kind of radiation. He called them *x*-rays, but Kölliker gave them the name of Röntgen rays in honor of their discoverer. Always a man of modest and retiring type, despite the bestowal of the Nobel Prize in 1901, and other honors, he suffered exquisitely when his assistant was credited with the discovery. The false light in which he was placed so affected him that he retired from his professorship and died in 1922, literally a heart-broken man. A well-known fact in connection with the discovery of *x*-rays, but worthy of repetition, was the part played by Dr. Arthur W. Goodspeed, then Professor of Physics at the University of Pennsylvania. Modestly disclaiming any credit, Dr. Goodspeed told me that in the Winter of 1889 and 1890, Mr. Wm. E. Jennings, a professional photographer for the Pennsylvania Railroad, was referred to him by Mr. J. C. Simms, at that time Treasurer of the Pennsylvania Railroad, and one of the Trustees of the University of Pennsylvania. Working with Crooke's tubes, they found shadow pictures of coins on plates which had been in plate holders. Mr. Jennings kept the negatives. After the publication of Röntgen's report in December, 1895, the nature of their findings became clear to them. Röntgen's discovery was also accidental in so far as he observed the strange fluorescence of a platinobarium screen some feet away, when working with a Crooke's tube. He then noted that these hitherto unknown rays passed through most solid substances, and that in doing so, they registered on a photographic plate. Two months later, in December, 1895, he shared his discovery with his fellows at a scientific gathering held in Würzburg.

During this same period, a young man and woman were diligently applying themselves in an old shed in the environ of Paris, alternately stirring and figuring. In 1898, these two, Pierre and Marie Curie, gave to the world radium chloride. Though medicine is greatly indebted to the mathematicians and physicists of the seventeenth and eighteenth centuries, the nineteenth century witnessed the direct application of physics, chemistry and biology, hence the epochal advances which have been made, infinitely greater than in any similar period of the world's history.

It was a physician, Thomas Young, who gave us the wave theory of light in 1802, a year after he described astigmatism. Some years later, his work was to prove one of the means by which Michaelson studied the velocity of light and led Michaelson to the discovery of the interferometer. It was Finsen however, who pointed out the therapeutic differences of the red from the actinic end of the spectrum, in 1893 and 1895. This was followed in 1896 by Leo Arons' invention of the mercury vapor lamp, the quartz mercury vapor lamp of Peter Cooper Hewett, in 1901, and the development of the therapeutic lamp of Kromayer, in 1904. These led to the work since done by Steenbock, Hart, Hess and others on irradiation as a factor in relation to certain of the vitamins. Equally astonishing has been the practical application and extension of the discoveries of Röntgen and the Curies: one of the earliest names was that of W. B. Cannon, who, in 1898, was able to demonstrate, by bismuth, the movements of the stomach in animals, and of the bowel, in 1902; the dosimeter of Holzknecht and Kienböck, 1900–1902; Albers-Schönberg who increased the factor of safety by the introduction of the leaden chamber; Perthes' deep therapy method, in 1903; the Coolidge tube, in 1913, and the Potter-Bucky diaphragm in the same year, and later the vertical Bucky; the pneumoperitoneum of Weber, in 1915; ventriculography of Dandy, in 1918; and cholecystography of Graham and Cole, in 1923 and 1924. These and the application of radium and radium emanations are now too well known to justify further comment. The ultrared end of the spectrum and special plates enable one to take pictures in an absolutely dark room, and the ultraviolet end will disclose an otherwise invisible eruption, and these short rays and quartz lenzes greatly increase the possibilities of magnification by the microscope.

Another great advance in precision, following shortly after the discoveries of Finsen, Röntgen and the Curies, was the invention of the electrocardiograph by William Einthoven of Leyden, in 1902. This was made possible by the introduction of the string galvanometer by Adler. As early as 1878, action currents of the heart were studied by Burdon Sanderson and Page, who used a Lippmann capillary electrometer, and by A. D. Waller, in 1889, who was the first to use electrodes and leads. The mercury lag defeated fine observations, later solved by the Einthoven instrument. The electrocardiograph has displaced the polygraph of Jacquet and Mackenzie, as these in turn supplanted the older sphygmographs of Dudgeon and Marie. The pioneer work of Stephen Hales (1677–1761), an English clergyman, who became an eminent physiologist, led to the development of the present blood pressure instruments, now in universal daily use.

Apart from the discovery of the auriculoventricular, muscular connecting bundle of Stanley Kent, in 1892, and by Wilhelm His, Jr., in 1893, all of the modern heart work, the discovery of the nodes and the mechanism of the normal and pathologic physiology of the heart, came after the year 1900. The röntgen ray and the Einthoven instrument, especially, have not alone added much to our knowledge directly, but they have sharpened our powers of observation, and increased our appreciation of certain physical signs. To the practicing physician, physical signs and phenomena are of more importance than furnishing a label. To name a disease may convey something to a patient or his family, but it does not necessarily aid the physician. To him, a careful search for signs and an equally serious attempt to interpret them, may lead to a better understanding of the factors involved in their production. Perhaps an apt illustration is the explanation of abdominal pain in the absence of sensory nerves, and the picture of abdominal disease in certain involvements of the thorax or its viscera, or of aneurysms or new growths in the thorax, or tumors impinging upon the spinal cord. This was first pointed out by Hilton in his manual on "Rest and Pain," but some few years elapsed before it was generally applied. Even today, insufficient attention is paid to plus tension with or without tenderness, as manifestations of deep-seated and often remote morbid processes. Capp's reflex is an instance: tenderness and tension, often pain in the distribution of the fourth and fifth cervical nerves, via the phrenic, in diaphragmatic pleurisy, and in the same manner, right shoulder tenderness and pain in gall-bladder disease.

One who has not made an attempt to survey the various signs, râles, murmurs, etc., employed in physical diagnosis, may be astonished when he learns that there are 541 separate and distinct signs, most of them lacking immediate significance, in that they are buried in the eponym, very few being descriptive in nomenclature. There are at least 65 murmurs, 30 different râles, 39 sounds, 103 phenomena, 34 bruits, 10 characterized under fremitus, 28 under the caption, movement, as automatic, circus, ciliary, choreic, etc., syndromes to the number of 167, 223 reflexes, 183 laws, 183 lines, and 30 linea. There are also 33 classed as types, among which are included vagotonic, sympatheticotonic, syntonic, schizoid, pyknic, vesanic, etc., to which more might be added if we were to follow the plan of Dr. George Draper. These give a total of 1669, with slight duplication, all coming under the head of one or more of the subdivisions of physical diagnosis, inspection, palpation, percussion and auscultation. It is probable that relatively few of these are generally known, and perhaps fewer still are known by name. That is the disadvantage of an eponym. For instance, we all know that bulging or prominence of the epigastric region occurs in large, pericardial effusions, though we might not recognize this as Auenbrugger's sign. The term, reedy nail, might not convey a meaning, but the longitudinal furrows occurring after injury to the matrix or lunula, or after severe general infections, are known as such to every one. Many really valuable measures, included among the rather formidable list referred to above, could be made readily available by systematic grouping under descriptive names. By such means too, it seems probable that we would receive an impulse to rationalize; to become more interested in the morbid physiology than in bestowing a label.

I have not, up to this time, made an accurate survey, but I am inclined to believe that the majority of physical signs would come under the head of inspection. Inspection may well be attributed to Hippocrates, as may auscultation, so far as the appreciation of the succussion splash is concerned. Inspection could be further amplified by the use of a strong hand lens and by employing ultraviolet light. I have observed an interesting sign or phenomenon which I have not seen recorded. In individuals with gradual failure of the myocardium, at or beyond middle life, few and rarely many, bright red papules develop on the chest especially, less often somewhat more widespread, but chiefly confined to the anterior surface of the trunk. They resemble nevi. They are elevated, small, well circumscribed, do not disappear on pressure, but fade and eventually disappear only in those whose general condition improves. Thus they have a prognostic value. Dr. Fred Weidman has made a histologic study of them for me. He found that the capillaries are highly ectatic, but in a uniform manner and not at all cavernous. Dr. Weidman believes that the increased numbers of capillaries are not due to branching of newly formed ones, but rather to elongation and tortuosity of preexisting ones. The lining endothelial cells are not hyperplastic, which takes them out of the class of nevi. The stroma between the capillaries is loose, as though edematous. The collagen bundles are attenuated, and resemble elastic fibers. It seems likely that there is regressive softening in the situation where these capillaries have become ectatic.

Palpation may be superficial, deep or bimanual. To many it merely implies a search for some morbid mass, but it has a wide range of application. Most neglected are: a study of the two halves of the thorax and abdomen for any possible lag, fullness in the flanks and ballottement in the presence of free fluid in the abdomen, and above all, a careful search for increased tension with or without tenderness. This is well exemplified in such a condition as angina pectoris or the iliac crest reflex in renal calculus. What may be termed regional and selective palpation has grown out of the studies of Karl Gustaf Lennander, a Swede, whose book was translated by Arthur Edward James Baker and the translation published in 1903. This was the stimulus which resulted in James Mackenzie's book on "The Interpretation of Symptoms." Lennander was a surgeon. His studies deal particularly with peritonitis, and he explains the reason for the abdomen being a so-called silent area at times, and at other times, the site of local or diffuse, more or less painful areas, associated with muscle tension of the abdominal wall.

Percussion as a purposeful procedure we owe to Auenbrugger; but its range has naturally been extended throughout the intervening years, so that we now have about twelve different phases, as superficial, deep, palpatory, auscultatory, mediate, immediate, etc. Auscultation, in the instrumental sense, began with Laënnec; but there can be no doubt that it was practiced by Hippocrates, using his unaided ear, else the Hippocratic succussion splash could not have been recognized by him, the mediate and immediate methods respectively. Hawksley, well-known medical and surgical instrument maker of London, tells us that the older stethoscopes were made long and in one piece, so that they could be conveniently worn in a high hat, the appropriate head gear of a well dressed doctor up to a generation ago, especially in Europe. Dr. Judson Daland was one of the first to shorten the so-called single stethoscope and to divide it into three parts, the bell, the stem and the ear piece, for convenience of carrying in the vest pocket. It was Daland, too, who introduced "a new hematocrit and a new technique."

Professor Blix is credited as the first to suggest centrifugal force in the separation of red and white blood cells; but it was in 1891 that Sven G Hedin invented the first hematocrit, the same year in which Quincke introduced lumbar puncture, and Halsted introduced rubber gloves as a part of surgical technique. In this year also, Judson Daland, after seeing Hedin's presentation at Wiesbaden, later at Prague, devised the first hematocrit of the closed type with a definite r.p.m. related to an equally definite number of revolutions of the handle. In the mechanics of this instrument, he was aided by F. F. Metzger of Philadelphia. Soon followed the water driven and later, the electrically driven types. Daland stressed the importance of plasma-cell ratio and the cell-hemoglobin ratio, and from these have emerged the methods of obtaining the volume and saturation index, also the colorimetric determination of blood volume of Keith, Rowntree and Geraghty. The pharmacological work of Abel with the phthaleins in 1909 led to the phenolsulphonephthalein functional test of the kidneys by Rowntree and Geraghty in 1910, and in 1913 to the phenoltetrachlorphthalein test for liver function by Rowntree, Hurwitz and Bloomfield.

The number of physical methods introduced since 1900 for the purpose of disclosing morbidity is stupendous. Mechanics and other branches of physics, various methods of sensitization, a host of functional measures, indeed, the work of the pure scientist is eagerly scanned in the hope of finding some application to medicine, just as Steinmetz applied a plaything of the mathematician, imaginary numbers, to the armamentarium of the electrical engineer. The development of the grid tube, the valve of the English, and its congener, the photo-electric cell, have brought to us sound filters which made the stethophone possible, and the application of the photo-electric cell as a hemoglobinometer and for many other purposes is only in its infancy. Restricting ourselves more narrowly to physical signs, those elicited by any one or a combination of the four physical diagnostic methods are legion. It would not be possible even to name them here. Some of the signs have been modernized and appear under new designations. For instance: Hippocrates described a friction râle and a sound resembling the creaking of new leather, a pleural friction, also the type of breathing we now speak of as Cheyne-Stokes. Out of the studies of Waller, 1862, Quincke, 1875, Czermak, 1879, on vagus inhibition, by vagus pressure, has grown the ocular compression sign or phenomenon, often referred to as Aschner's sign. This, in turn, led to the view that the right vagus is more apt to produce cardiac standstill, while compression of the left vagus causes block. Slowing of the heart is said to be more marked in vagotonia and to be inverted, i.e., the heart is accelerated in sympatheticotonia. This only exemplifies a statement made previously that a careful interpretation of signs and phenomena invites a more intimate contemplation of pathologic disturbances in physiology. David Riesman, in 1916, gave us two valuable eye signs: First, the soft eyeball met with in diabetic coma, and second, a bruit over the eyeball in exophthalmic goiter, which the French call "signe de Riesman." The differential nystagmus sign of Bard aims to separate organic from congenital nystagmus. In the former, the oscillations of the eye increase as the eye of the patient follows the examiner's finger from one side to the other. In the congenital form the oscillations cease. I believe Dalrymple called attention to the first part of Bard's sign. Another sign is attributed to Dalrymple though we were unable to find the original mention, and that is, the widening of the palpebral fissure in exophthalmic goiter. This has also been attributed to von Graefe, in addition to his other sign in the same disease; viz., the failure of the upper lid to follow the eyeball in downward movement, when exophthalmos exists. Some signs appear under different names, yet are almost identical: Bell's sign in peripheral facial palsy, where the eyeball rotates upward and outward during the patient's effort to close the paralysed upper lid; Negro's sign in seventh nerve palsy denotes a greater upward movement of the eyeball on the affected side, when the patient keeps his head fixed and looks upward; Bacelli's angulo-scapular sign in apical tuberculosis, and Ruault's sign in incipient tuberculosis, and Jaccoud and the Heine-Sanders in pericardial adhesions. Under adhesive pericarditis also, the Broadbent and Heim-Kreysig signs are further instances of the confusion existing. Damoiseau's sign, the Ellis line and the Ellis-Garland line, all refer to the same clinical manifestation in pleural effusion. The universally known Argyll-Robertson pupil is known as Vincent's sign.

For many years I have employed tension and lag in estimating morbid conditions, as no doubt every clinician has for generations, yet, as far as lag is concerned, both Bacelli and Ruault have their names associated with it. A number of different signs are buried under the name of Babinski and of Brudzinski also. When Riesman speaks of transdigital auscultation as a method of timing heart murmurs, there is no ambiguity. A stethoscope provided with a diaphragm is necessary. This is placed on the horizontal portion of an index or middle finger flexed at a right angle, the tip of the finger being placed directly over the apex beat. It is of value in timing mitral murmurs especially, a presystolic often being difficult to time. It serves well, too, in eliciting the double murmur called Duroziez sign, heard over the femoral artery in aortic regurgitation Riesman also described ulnar percussion as being more gentle and definitive than the fist percussion method of the late John B. Murphy, in eliciting tenderness over the gall bladder or kidney. I have found pinching the abdominal wall about the region of passage of the ninth intercostal nerve through the head of the right rectus, and pinching the right trapezius, the most satisfactory method of reflexly exalting muscle tension and disclosing gall-bladder involvement. By a similar study of tension one can occasionally follow a renal calculus in its passage down a ureter. By comparing the tension of the two sides over the iliac crests, it is possible to determine the side involved even in the absence of acute pain. Aortic murmurs are often difficult to recognize. These and the second aortic sound, Riesman has found, may be heard more clearly by what he has termed clavicular auscultation, i.e., by placing the diaphragm of the stethoscope over the clavicle in ausculting.

Robert Pitfield has recently described a new sign observed by him in free pleural effusions. This was published in 1932.[*] He states that if fluid in the pleural sack is above 400 c.c., direct percussing of the area over it will cause vibrations to be felt by the other hand pressed against the lumbar muscles of the same side about the level of the third lumbar vertebra. If the fluid is bilateral, waves induced on one side will not be transmitted to the other. The sign is more pronounced in direct proportion to the volume of fluid. Consolidations of the lung do not cause vibrations, hence this test is of considerable value in a differential sense. The patient must be upright during the performance of this test, and the upper level of fluid is readily determined. In Dr. Pitfield's hands it has been possible to determine very small amounts of fluid, in one instance only 30 c.c. were elicited on tapping.

My difficulty has been to refrain from describing the many signs which have been added in recent years. Even to enumerate them would require several pages. There had been a tendency away from them during the period of instrumentation and clinical laboratory study. Without in any sense decrying these, a more intimate knowledge of the patient as an individual may be obtained by close observation and the employment of the senses as implied in the utilization of physical diagnosis. Collective effort in the past 30 years has been especially in the direction of application of scientific chemical and instrumental procedures, instead of confining ones self to the more ready and less abstruse methods of physical diagnosis. These latter cannot be dispensed with; but it can scarcely be denied that the röntgen ray at times has lessened the acuity of bedside observation, so strongly developed in the clinicians of preceding generations. At the present time we are more intrigued by the possible value to be obtained from a contemplation of cell penetration, membrane potential, Donnen's membrane equilibrium, surface phenomena, the colloids, interface phenomena, blood chemistry and the various instrumental procedures, than in the study of the family history, personal history and careful physical diagnosis of the patient.

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[*] *J.A.M.A.*, Aug. 13, 1932.

ANCIENT DENTISTRY IN THE OLD AND NEW WORLD*

By BERNHARD WOLF WEINBERGER, D.D.S.

NEW YORK CITY

THE writing of history might be a simple problem, were the historian's knowledge of his subject complete, and his judgment unerring. It would then depend merely upon the writer's power of expression. As, however, the ideal condition never exists, his task usually resolves itself into an attempt to draw conclusions either from meager records, from seemingly contradictory statements, or from comparisons.

Comparisons, at times, are absolutely indispensable if we are to measure up the profit and loss accounts of men and things throughout the ages. An estimate as to improvement or deterioration in any direction cannot be gauged without a contrast.

It might seem exceedingly unfair and unreasonable to make a comparison of the old with the new, and expect to obtain any results thereby, especially with such a subject as I am to present in this paper.

I am inclined to believe that my readers have already arrived at the conclusion that if one phase of the present day "healing art" is of recent development, it is Dentistry. What basis is there then for presuming that it could be found well advanced in "The Mythical Period"?

The beginning of anything like a connected history of the science, which we now call Dentistry, can be placed with considerable definiteness about the early part of the 18th century, and is associated with the great name of Fauchard (1678–1761), the "Father of Dentistry." Yet we find that Dentistry, both as an art and a science, is included in the earliest medical treatises.

Research shows that the very materials, gold, silver, etc., must have found like employment in our profession in the remote days. Prosthetic pieces, skulls and teeth, have been discovered to prove actual accomplishments of earlier dentistry. Many instruments and simple appliances were devised, which we now regard as definite applications of present-day dental principles.

The earliest development of any science presents difficulties to the historian by reason of the fragmentary character of existing records, but with the progress of time, and the advance of research, the story becomes clearer and more coherent.

For our knowledge of the earliest data, we are in the first instance dependent upon evidence accumulated by archeological research of the remains of Prehistoric Man; in the second instance, to surviving specimens and documentary records of ancient times. During the period of primitive medicine and dentistry, the literature was very meager, while the artisans were not generally scholars, and being more or less of a secretive nature, they failed to leave behind details of their methods.

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* Read before Section L, History of Science Society, American Association for the Advancement of Science, and the Section of Historical and Cultural Medicine, N. Y. Academy of Medicine.

When and by whom dentistry was first practiced, history, as far as we can read it, fails to record, but there is ample proof that efforts were made by the early Europeans, by the Arabians and South American Indians in that direction.

Those in the Old World apparently interested themselves only in prosthesis, namely, the supplying of missing teeth, whilst we must travel to the New World, the South American Indian, for our story of the operative phase, that is, the preservation through artificial means of the individual tooth itself.

I must confine myself to the work of the early artisan in presenting this brief and therefore inadequate sketch of the early development of dentistry. This necessitates the omission of the interesting record that is to be found in the writings of those great medical scholars of that same period.

Let us briefly consider a few of the relics of primitive man, which furnish the earliest known record of his existence upon the earth. Did primitive man have to contend with the same dental problems as the present generation?

PRIMITIVE MAN

The teeth found in the jaws of prehistoric skeletons do not always show signs of caries, but those that do, apparently belonged to men well advanced in years, and abrasions caused by mechanical wear were frequent. The "wearing" no doubt was due to the nature of the food ingested, which was frequently eaten raw, and was, in consequence, exceedingly difficult to masticate. During this period, it was the "survival of the fittest," and evidence shows that man did suffer from caries. Those who did so suffer must have practiced extraction by means of the finger and thumb, the natural forceps of prehistoric man, with the alternative step of seeking the aid of herbs to soothe the pain.

Figure 1 clearly shows that the Neanderthal Man of 40,000 to 60,000 years ago differs little from the present. The shape of his jaws and the size of his teeth are very much like our own. Such anomalies as retained deciduous, impacted or unerupted teeth were to be found at that early date. Teeth were likewise lost during the life of the individual, for he suffered from dental diseases, as can easily be seen by the amount of bone destruction in Figure 2.

Some means must have been resorted to, to remove the troublesome tooth, as occasionally we find missing teeth, with a consequent change in the alveolar process.

EGYPTIAN DENTISTRY

In marked contrast to the remarkable dental progress of her surrounding neighbors, there seems to be no representation of dentistry in Egypt. This is all the more surprising if we are to judge from the wonderful art creations that have recently been uncovered.

Though it has been generally stated and accepted by the majority of writers that our profession had its origin in Egypt, and from there emanated the earliest of our findings, until now no authentic records or actual specimens have been found to indicate that the Egyptians had any knowledge of restorative dental practice at any time. Nevertheless, we do have some evidence that there were dentists in the early times, and that operative work must have been performed.

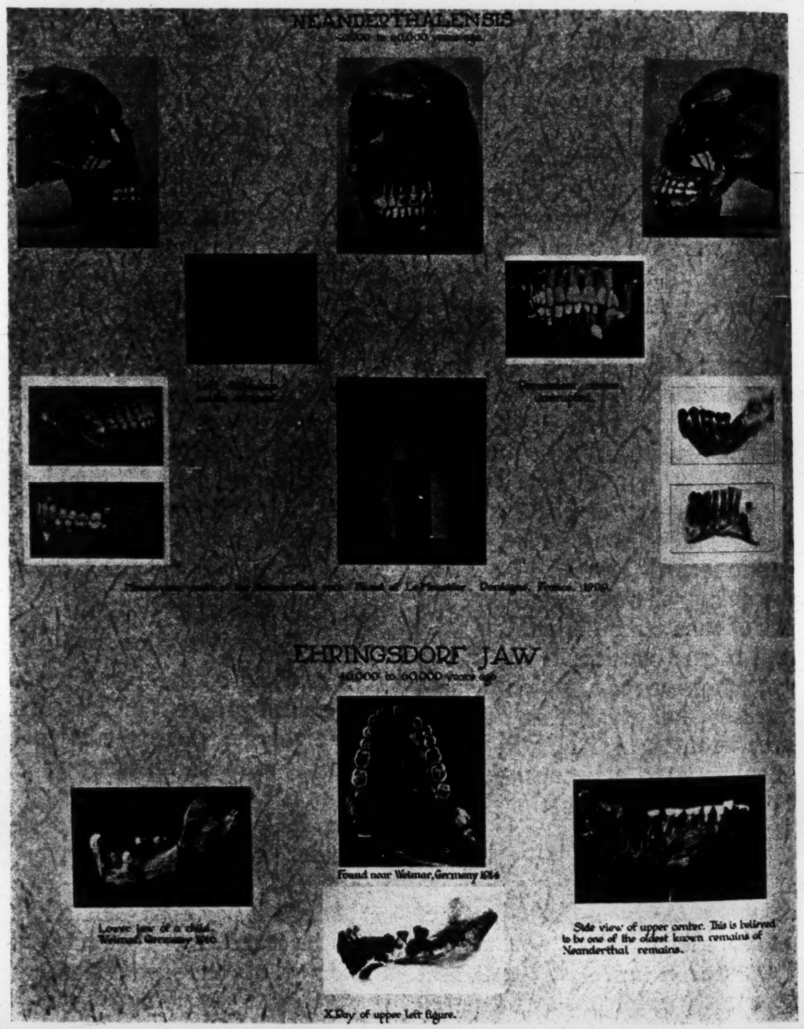
NEANDERTHALENSIS
EHRINGSDORF JAW
40,000 to 60,000 years ago
Found near Weimar, Germany 1914
Lower jaw of a child. Weimar, Germany 1916.
Side view of upper center. This is believed to be one of the oldest known remains of Neanderthal remains.
X-Ray of upper left figure.

Fig. 1. Neanderthal Man. Upper Showing Such Anomalies as Retained Deciduous, Impacted or Unerupted Teeth. Center Right Figure, an Example of Bone Destruction as a Result of Diseased Teeth.

The predynastic man of Egypt was no better off than his early ancestor, or his present-day surviving descendant, as can be seen in Figure 2. Here we find abscesses about the roots, tremendous wearing down of the cusps with pulp exposure, and teeth completely destroyed by caries.

Though the Egyptians made no attempt to fill decayed teeth, we have data to show that laudable attempts were made by others at a very early date.

How early the first attempt at

restorative dentistry was made, is still an unanswered question. It would seem that with all the thousands of tomb paintings and tomb relics, together with the mummies themselves, which have been left by the Egyptians, there would be enough evidence to determine positively whether the Egyptians practiced dentistry, but this is not the case. So far there is not one single piece of evidence that could be attributed to the work of an Egyptian dentist.

Our knowledge of Egyptian medicine and dentistry is derived largely from the various papyri, such as the Brugsch, the Ebers, the Kahun, the Hearst and most important of all, the Edwin Smith papyrus.

It is from the latter that we actually learn of dental operations; the others merely include references to dental diseases such as gingivitis, erosion, pulpitis and "toothache." For the cure of these conditions many prescriptions are given in the forms of plaster and vegetable decoctions. One of these called for equal parts of a powder from the fruits of palms, green lead, powdered flint stone and honey.

As early as 3000 B.C., in the famous Edwin Smith papyrus, we now find a record of a healing fraternity, in Egypt, of which the dentist was a fellow member. This is later confirmed by Herodotus who states[1]: "The art of Medicine is thus divided among them: Each physician applies himself to one disease only, and not more. All places abound in physicians, some physicians are for the eyes, others for the head, others for the teeth, others for the intestines, and others for internal disorders."

At its inception, dentistry stood in the relation of the child to its parent. The history of dentistry and medicine are so inextricably interwoven that the consideration of one involves that of the other. Indeed the physician forms the only bond of continuity in dental history between Egypt, Greece and Rome, and the middle of the eighteenth century.

With the recent deciphering by Breasted of the *Edwin Smith Papyrus*,[2] we are now certain that "oral surgery" was practiced early in Egyptian history. I will not dwell upon this papyrus fully, but merely call atten-

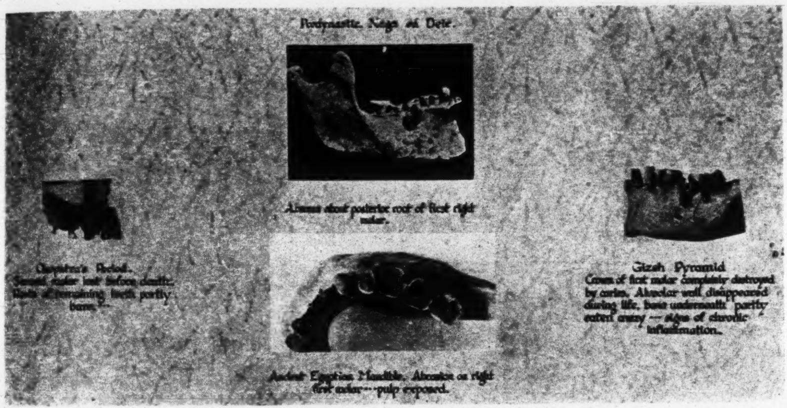
Predynastic. Naga ed Deir.
Abscess about posterior root of first right molar.
Cleopatra's Period. Second molar lost before death. Roots of remaining teeth partly bare.
Gizeh Pyramid
Crown of first molar completely destroyed by caries. Alveolar wall disappeared during life, bone underneath partly eaten away — signs of chronic inflammation.
Ancient Egyptian Mandible. Abrasion on right first molar—pulp exposed.

FIG. 2. DENTAL CONDITIONS AS FOUND IN EARLY MAN. EGYPT.

tion to the fact that among the case reports are a number of interest to my profession.

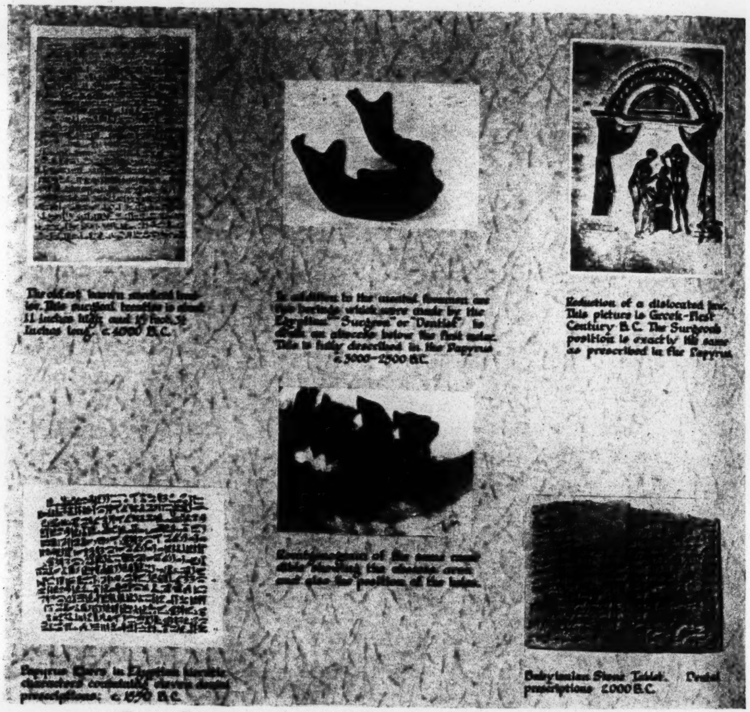
The oldest known medical treatise. This surgical treatise is about 11 inches high and 15 feet, 3½ inches long. c. 4000 B.C.
In addition to the mental foramen are two borings which were made by the Egyptian "Surgeon" or "Dentist" to drain an abscess below the first molar. This is fully described in the Papyrus c. 3000–2500 B.C.
Reduction of a dislocated jaw. This picture is Greek-First Century B.C. The Surgeon's position is exactly the same as prescribed in the Papyrus.
Roentgenogram of the same mandible showing the abscess area and also the position of the holes.
Papyrus Ebers in Egyptian hieratic characters containing eleven dental prescriptions. c. 1550 B.C.
Babylonian Stone Tablet. Dental prescriptions 2000 B.C.

Fig. 3. Earliest Authentic Records of Dentistry, Egypt.

I find five specific references to the teeth, twelve to the mouth, twelve to wounds in the mouth, five to jaws, and over twenty to the mandible. Regarding the latter, it refers mainly to ligaments, articulations, dislocations and fractures.

The interesting feature of this surgical treatise is the material therein, relating to fracture of the jaws and their treatment, to abscessed teeth, and whether or not to treat, depending upon circumstances.

It also mentions that the "Court Physician" was likewise the "Court Dentist."

One of the most interesting sidelights regarding the Edwin Smith Papyrus is its confirmation by an archeological find of a human mandible, that was first described in 1917 by Kurt Thoma[3] of the Harvard Dental School. (Fig. 3 center.) This mandible, now in the Peabody Museum, and again described by E. A. Hooten,[4] is from a fragmentary skeleton unearthed by G. A. Reisner at Giza, and dates about the period of the Fourth Dynasty, 2900–2750 B.C. It is of a middle-aged male, and the teeth are quite worn. The body of the mandible presents unmistakable indications of a successful surgical operation on a patient, who evidently suffered from an abscess beneath the lower right first molar. Two holes, which can plainly be seen in the roentgenogram in Figure 3 center, had been drilled through the alveolar process in order to drain the abscess.

There is also a painting by an unknown Greek of the first century B.C., which portrays the Hippocratic method of reduction of a dislocated jaw. Here (Fig. 3 upper right hand corner) we find that the surgeon's procedure, position and method of operation are identical with that as explained in the Smith Papyrus.

DENTISTRY AMONG THE ETRUSCANS, 1000–400 B.C.

The varied and numerous dental appliances found in the tombs of the Etruscans, and now preserved in different Italian museums, demonstrate that dentistry profited by the constant interchange between the Phoenicians, Grecians, Romans and the inhabitants of Italy, and that they achieved great results and success in the dental art.

The goldsmith's art is of such antiquity that it is impossible to put a date as to just when thin strips of gold were first bent around loose teeth, in order to steady them by attachment to the more firmly adjacent teeth.

The first step of a mechanical kind probably arose from the attempt to fasten teeth, which were loose or loosening, more firmly in their sockets. This was accomplished by the use of wire or grass and was no doubt the first method adopted. For substitution of a tooth the most handy substance, doubtless, was a tooth taken from some animal used for food, such as a sheep or an ox, and ligated by means of grass and later used as part of an artificial appliance.

The curious so-called dentures in terra-cotta, often referred to as early examples of artificial teeth, were crude representations, and really were Etruscan votive offerings, like the models of other parts of the body offered by patients to their gods in order to be cured, or often after having been cured of dental maladies.

The Etruscans, who excelled as artificers, developed the dental art beyond any of their neighbors. Pure gold was utilized and the soldering was perfect. Rivets, neatly applied, were used to retain supplied teeth in their proper position. They constructed gold frames so as to hold loose teeth, to steady others, and to contain artificial ones. These indicate by their construction, that whoever made them must have had some idea of fundamentals, for they are fitted in such a way as to stand clear of the gum margins, thus fulfilling the conditions of modern bridgework.

Figure 4 illustrates examples of their ingenuity and workmanship.

The tooth crowns in the upper left-hand corner were found in an Etruscan tomb of the ancient Vitulonia (and are now in the Archeological Museum of Florence). They are four molars and one canine. The enamel-capsules of these teeth are well preserved, whilst the ivory has entirely disappeared. Here we find the earliest attempt to imitate the anatomical shape of the tooth, restoring the correct crown form, cusp relations and their sulcis. I hardly believe they could be much improved upon today, and they were certainly way ahead of the hideous, typical "stove pipes" so commonly found in the mouths of a generation ago.

Another interesting specimen is the one in the center of Figure 4, an appliance for supporting a number of artificial teeth; the large one, an ox tooth, was so carved as to represent two centrals and then riveted to the gold frame. One other tooth has disappeared. This piece consisted of seven individual bands, each fitted to conform to the shape of a tooth, and then soldered together to form one piece of bridge-work.

Soldering was evidently a complicated performance, but since it was done by the Greeks, it must have been an everyday practice with the goldsmiths. It is difficult for us to realize what it must have been like to carry out an extensive soldering operation, before the introduction of gas and our present-day contrivances.

A careful examination of the other specimens indicates that there must have been many well-versed in their technique, for each represents a different problem and each was handled from an entirely different viewpoint and method.

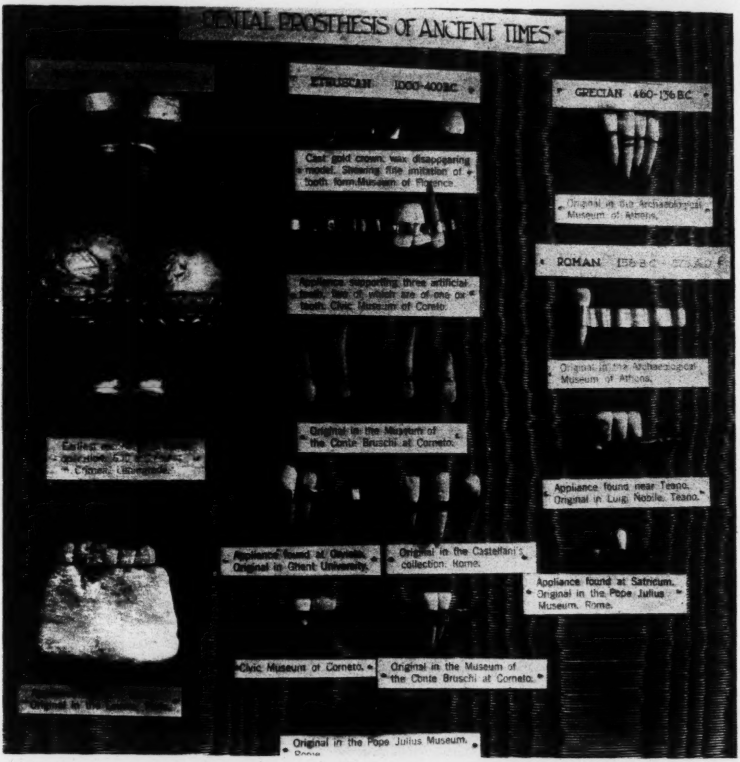
DENTAL PROSTHESIS OF ANCIENT TIMES
ETRUSCAN 1000-400 B.C.
Cast gold crown, wax disappearing model. Showing fine imitation of tooth form. Museum of Florence.
Appliance supporting three artificial teeth, two of which are of one ox tooth. Civic Museum of Corneto.
Original in the Museum of the Conte Bruschi at Corneto.
Appliance found at Orvieto. Original in Ghent University.
Original in the Castellani's collection. Rome.
Civic Museum of Corneto.
Original in the Museum of the Conte Bruschi at Corneto.
Original in the Pope Julius Museum. Rome.
GRECIAN 460-136 B.C.
Original in the Archaeological Museum of Athens.
ROMAN
Original in the Archaeological Museum of Athens.
Appliance found near Teano. Original in Luigi Nobile, Teano.
Appliance found at Satricum. Original in the Pope Julius Museum. Rome.

FIG. 4.

PHOENICIAN DENTISTRY, 600–300 B.C.

Of the dental art possessed by these people, we know little. The appliances found at Sidon (Fig. 4) and the Phoenician vase upon which is represented the primitive method of extraction, are the means from which we must form our conclusions, but these two examples amply illustrate the knowledge of dentistry they possessed.

As to the Phoenician vase, W. H. Eames, in the *Independent Practitioner* for June, 1886, states:

> One of the earliest records of a dental operation is found upon a Scythian vase discovered in an immense tumulus or burial mound, situated about four miles to the westward of Kertch, a small town on the Crimean peninsula. . . .
>
> Near the splendid wooden sarcophagus of the king were the remains of a woman, doubtless his queen. On her head was a mitre-shaped diadem, and at her feet a small vase of electrum, upon which is embossed a frieze of characteristic episodes of Scythian life. Electrum, an alloy composed of gold with a fifth part silver, was highly valued by the Greeks, its color being paler and more luminous than gold. Upon a vase are four groups in exquisite repoussé work, giving incidents in the life of the same person. The king is clad in the Scythian costume, a tunic belted at the waist, and full trousers tucked in his boots, which is almost identical with the Russian costume of today. In the group he is listening to the report of a warrior kneeling before him, in another he is bending a bow, in the third his wounded leg is being dressed by an attendant, and the last, as before stated, is one of the earliest known representations of an operation in dentistry. The king is half sitting, half kneeling, while the Scythian dentist is evidently "fixing" or extracting a tooth from the left side of the jaw. It is reasonable to suppose that this represents an actual incident in the life of the skeleton found in this tomb.

The earliest artificial denture is that discovered by Gaillardot, and described by Renan in his "Mission de Phénicie,[5] the result of researches made in the necropolis of Sidon. Dr. Gaillardot found a quantity of small objects in a grave, among them a part of the lower jaw of a woman with the two canines, and the four incisors joined together with gold wire (now in the Louvre at Paris); two of the incisors would appear to have belonged to another individual, and to have been applied as substitutes for lost teeth. This piece, discovered in one of the most ancient tombs of the necropolis, proves that dental art in Sidon was sufficiently advanced.

GRECIAN DENTISTRY, 460–136 B.C.

It is Greece which furnishes the most interesting records of the history of medicine during antiquity. For over seven hundred years medicine underwent a transformation, being practiced by the shepherds, then becoming sacred and finally wrapped in mystery. We must go back to the Greek philosophers to find any knowledge concerning the teeth.

Nothing of consequence is to be found in the early history of Greece, time having destroyed everything. It is known that Erasistratus (about 300–245 B.C.) deposited, in the Temple of Apollo, a forceps, an instrument of lead, for the purpose of extracting teeth.

We find no reference to dentistry or other sciences during the first century of Greek civilization. Up to the time of the siege of Troy (1193 B.C.), the writings of the early Grecians consisted almost entirely of hymns to the gods. Homer has failed to mention the subject in his works, although he relates that the teeth of warriors were broken, yet he does not tell what was done to replace them. According to Cicero, extraction was first advised by the third Aesculapius, son of Arsinoë and Arsippi (1300 B.C.), who also recommended cleansing the mouth and teeth. According to this, dental surgery had its origin with Aesculapius, the "God of Medicine" and the most ancient authority on medical science.

Hippocrates (460–377 B.C.), in many of his voluminous writings, deals with the teeth as a part of the bony system. That dentistry had an integral part in the Hippocratic scheme of thought is a consideration of some moment to us.

In his writings are found the earliest known literature pertaining to the teeth, a crude description dwelling mainly upon the phenomena of nutrition, and upon the disorders of which they are the cause. He describes the function, and the period of eruption of the teeth, and recommended the use of a dentifrice. Living in an age of superstition, he had the ability to discover natural causes, and the courage to proclaim them in spite of long-rooted prejudices.

Aristotle (384-322 B.C.) was the first to devote a chapter of any length to the teeth, examining them in relation to their comparative anatomy, noticing that not only is there a difference between the human teeth and those of inferior animals, but between species of the latter. The number and forms of the teeth vary in animals according to their food, and the service they are put to. In man they serve mainly for mastication, and are also of use in assisting articulation of words and in the pronunciation of certain letters.

Aristotle has given us much information, some of which is the basis of our principles today; but he falls into many curious errors, such as that a man has more teeth than woman, and that the same difference exists in the sexes of some animals, as the monkey; that the human teeth increase in length during life, and thus they differ from other bones.

Figure 4 shows examples of Greek dentistry, much cruder in conception and workmanship than that of the Etruscans.

DENTISTRY AMONG THE ROMANS (156 B.C.-576 A.D.)

From actual records we have definite documentary evidence that the dental art was known and extensively practiced prior to the time medicine became a profession, for one of the Laws of the Twelve Tables promulgated in 450 B.C., by a body of ten magistrates, refers to teeth sustained by gold wires. Among the laws was one that governed the use of gold for dental purposes. It was customary among the wealthy Romans to burn or bury articles of gold with the dead, but gold being scarce at that time, it was feared that burying it with the dead might lead to abuse. Certain rules governing its use are found inscribed thereon, forbidding the burial of any gold with the body of a deceased person, other than that which is used to bind teeth together. The following, found in Cicero's work,[8] concerning the afore-mentioned tables is recorded: "Neither shall gold be added thereto (to the body), but it shall not be unlawful to bury or burn it with the gold with which the teeth may perchance be bound together."

If the statement of Pliny[9] is correct, we find that the Romans did not need physicians until the teeth became defective, a suggestion that modern investigation is tending to establish.

It is apparent from this, that four and a half centuries before the Christian era, there were individuals who practiced dentistry in Rome, and, since there is evidence of the use of artificial teeth among the Etruscans before that period, they undoubtedly introduced their use among the Romans. Although at this time there were no regular medical practitioners in Rome, a dental appliance of peculiar interest has been found in the Greco-Roman necropolis at Teano, near Caserta. It consists of three human teeth fixed in a series of rings, made of laminated gold wire, which is turned around the teeth and then soldered. This "bridge" was fixed to the mandible of the skeleton of a woman in a tomb, dated between 400 and 300 B.C., according to authorities. (Fig. 4.)

Aurelius Cornelius Celsus (25 B.C.–A.D. 50). We find all through the book "De Re Medicina" of Celsus, passages devoted to the hygiene and diseases of the mouth. He also alludes to the ailments due to dentition, convulsions and the accompanying fever. That the Romans did not escape the torture of toothache is evident from the numerous recipes recommended by him and others, and the various narcotics used to induce sleep. Celsus sympathetically remarks:

> It may be numbered amongst the worst tortures, the patient must abstain entirely from wine, and at first, even from food; afterwards, he may partake of soft food but very sparingly, so as not to irritate the teeth by mastication. Meanwhile by means of a sponge he must let the stream of hot water reach the affected part, and apply externally, on the side corresponding with the pain, a cerate of cypress or of iris, on which he must then place some wool and keep the head well covered up.

When a tooth is decayed, Celsus advises that there should be no haste in extracting it, but to try and relieve the pain by herbs and medicine, if possible. In those cases where the pain is violent, the application of hot poultices is advised on the cheek and the holding of hot liquids in the mouth, prepared with a suitable herb.

I have time to only mention the names of Pliny (A.D. 23–79), Martial (A.D. 46–101), Scribonius Largus (*ca.* A.D. 47), Archigenes (A.D. 48–117), Galen (130–200), Oribasius (326–403), Aetius (502–575) and Paulus Aegineta (625–690).

Their archaic methods might provoke a smile today. I need only explain that I quote them not as evidence of our early professional attainments, but merely to emphasize the fact that during this period the fundamental conception of a dentist, as we read from the literature, was that of the physician. Their's was the theory. On the other hand, I cannot help but come to the conclusion that the beautiful examples of the craft, as they have come down to us, were made by artisans not much concerned with the theoretical side of the profession, but who possessed a knowledge of mechanics and the application of its principles. Many of these same principles we recognize today as fundamentals.

This ancient "bridge work" was well conceived, answered the purpose for which it was intended, and of a workmanship which we, with our present methods, could well be proud of.

PRE-COLUMBIAN DENTISTRY IN SOUTH AMERICA

We have so far considered the various stages of development of primitive dentistry in Europe, and found that it related only to the prosthetic phase.

I now propose to shift the scene to the New World, to South America, and will endeavor to illustrate that, as in the present age, the greatest advances in our practice were made in America. For proof of the earliest operative practice and advancement we must look to South America.

Whether operative dentistry was practiced before or after death, similar to a custom in other races, no definite proof is to be had, but the evidence so far at hand points in favor of this practice having been performed prior thereto.

The one question of which we have no absolute answer is, what was the purpose and object of these operations? Was it for prophylactic measures, ornamentation or cosmetic reasons, rather than prosthetic? Who knows? There is evidence that points to each.

Professor Saville, in his explorations in the Province of Esmeraldas in North Ecuador, excavated a number of skulls, supposedly of the pre-Inca tribes of South American Indians, that are particularly interesting to us. These skulls exhibited a high stage of development of dentistry, and as the modern casting of gold inlays dates back only to 1907, the work displayed by this primitive race is all the more remarkable.

Saville states:[11]

> The skulls showed that the men were of a type superior to Aztecs. Besides the better shape of the skull, the teeth were often filled with gold and cement, proving that dentistry was at a high stage of development among the early residents in Ecuador thousands of years ago. Another custom which we have found in Esmeraldas, and which, so far as we are aware, is not present in any other part of South America, is the decoration of the teeth by the insertion of inlays in small perforations cut in the enamel of the upper incisors. This custom of decorating the teeth was quite common in various parts of Mexico, where different settings were used. In the Mayan area, as far south as Salvador, the object most often used for inlay was jadeite. In Mexico, I have found hematite used, in Vera Cruz, turquoise has been found, and in the other parts, teeth with settings of rock crystal, obsidian, and a red cement, have been found.
>
> The upper middle teeth are decorated by the insertion of thin gold discs in cavities drilled or bored in the enamel upon the face of the teeth. An unusual dental feat, in addition to the decoration, is found in the right middle tooth. This is not a right middle incisor, but a right lateral incisor, which does not belong to the jaw but was implanted to replace the middle incisor. This is such an extraordinary feature that we must weigh very carefully the evidence as to its having been found in the jaw. Everything is in favor of this position, indeed there is no reason to doubt that the replacement is a genuine pre-Columbian triumph of the ancient dentist in Atacames.
>
> The tooth fits perfectly into the socket, although as a matter of course, it is not so long as the cavity, this space at the end being proof that the original tooth was replaced by the implanted one only a short time before death, otherwise the growth of bone would have filled it.

Upon examining this specimen, which is now in the Heye Indian Museum in New York, I find that the tooth was not only implanted, but there is every indication of root resection or amputation having been performed, approximately a quarter of an inch of the root being removed, with the surface perfectly smooth and even.

The skull found by Prof. Saville is not only historically interesting for the remarkable implantation found contained therein, but for the inclusion of decorated teeth and gold inlays.

The setting of the implanted left middle incisor of the Atacames specimen under consideration (Fig. 5 bottom), is a little larger than that in the right tooth, being a slightly irregular disc 6.5. mm. in diameter, while the other inlay, a perfect disc, is only 5 mm. in diameter. The smaller disc, however, is slightly thicker than the larger one, being less than 5 mm. in thickness, the other being 3 mm. The surfaces of the inlays are flat and polished. The larger one projects below the edge of the central part of the tooth, and viewing it from the inside, it appears to have been filed, and thus decorated before the insertion of the inlay.

Another example of early implanted teeth in ancient America has been described by Dr. Andrews:[12]

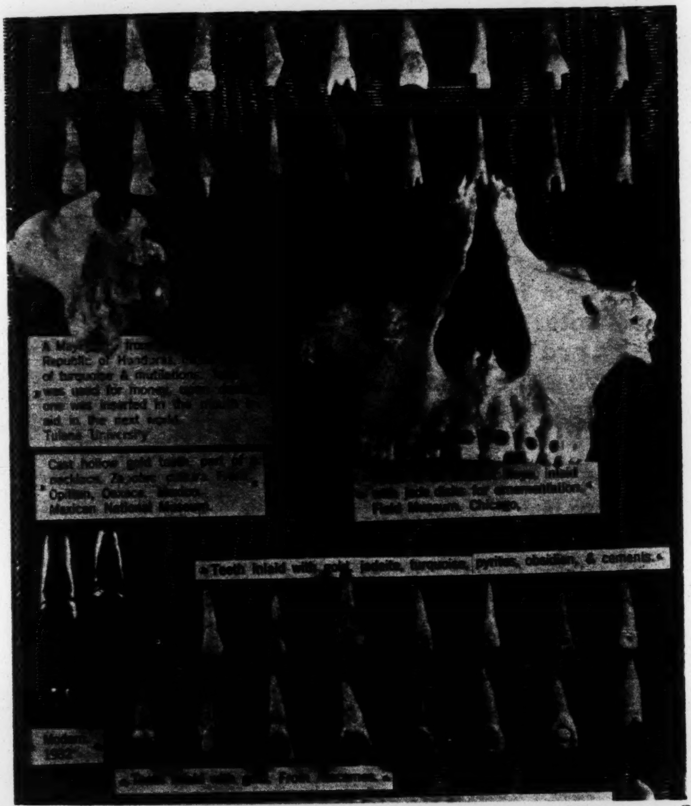
A Maya ... from
Republic of Honduras ...
of turquoise & mutilations ...
was used for money ...
one was inserted in the mouth ...
aid in the next world.
Tulane University
Cast hollow gold teeth, part of a
necklace, Zapotec culture, ...
Opitlan, Oaxaca, Mexico.
Mexican National Museum.
... inlaid
with jade discs for ornamentation.
Field Museum, Chicago.
Teeth inlaid with gold, jadeite, turquoise, pyrites, obsidian, & cements.
Modern ...
1932
Teeth inlaid with gold. From Atacames.

FIG. 5. MUTILATION AND DECORATION OF TEETH, AMONG THE INDIANS OF NORTH AND CENTRAL AND SOUTH AMERICA, ABOUT 1000 YEARS AGO. UPPER ARE VARIOUS TYPES OF MUTILATIONS SO FAR FOUND.

The most interesting dental curiosity in the collection is an implanted tooth, made of some dark stone. It was found neatly fitted in the sockets of an inferior left lateral incisor, and is shaped very much like the natural tooth. That it had been worn for some time during life was indicated by the thick incrustation of tartar upon it.

As extraordinary as these admirably successful attempts at transplantations and implantations are, no less remarkable are the wonderful inlays that have been unearthed in the various explorations in South America.

From the collection of skulls found containing inlayed teeth, one learns that the number of teeth decorated was variable. The one discovered and described above contained two, while Figure 5, from the British Museum, shows a skull formerly containing eight gold inlays in the upper jaw, decorating the four incisors, the two canines, and the two premolars.

Another interesting example of tooth ornamentation is a skull with teeth overlaid with gold, from La Piedra, Ecuador, and also in the Heye Museum, New York. The decoration of the teeth is unique, and presents a new type of facial ornamentation:

> Instead of small discs being set into artificial cavities we find in this case, as shown in Figure 5, that certain teeth of the upper jaw were almost entirely covered on the outer face by an overlay of gold. The entire enamel of the teeth decorated has been removed, with the exception of narrow bands at the necks of the upper parts where they were close to the flesh and imbedded in the jaw. The removal of the enamel is through to the dentine and was skillfully accomplished. It appears that in some instances, sawing was done slightly under the enamel at the upper parts so that the gold overlay, or covering, might be fitted under it in order to make it more secure. In one tooth there is a very tiny ridge on the right side where the enamel was left in a beveled line. The teeth thus practically "face-crowned" are the four incisors and the two canines. . . . In some of the cuts (as only the left lateral incisors contain an overlay), traces of a cement which aided in holding the gold fast to the teeth may still be seen.

No decay around the edges where the "overlays" were inserted is seen on the surface of the dentine, showing the delicate and accurate work on the part of the operator, so as not to injure the dentine and cause premature decay.

The interesting questions will be asked, How was the work of cutting the teeth accomplished and how was the patient able to withstand the pain of the operation done with the most primitive of tools? The only information that sheds light on the first query is found in the work of De Landa,[13] who, writing about the native population of Yucatan, the Mayas, says:

> They had the custom of sawing the teeth, leaving them like the teeth of a saw, and this they did for elegance or show; the work was done by the old women, filing them (the teeth) with certain stones and water. This probably explains the process employed by the people of Esmeraldas and Argentina in filing the teeth and in cutting out the enamel for overlays, as shown in the La Piedra skull; but, in cutting the cavities for inlay work, stone drills, or perhaps either hollow bone or cane drills, were employed with sand and water. No metal tools have yet been discovered in Esmeraldas or elsewhere in Ecuador by which the work could have been done. All the copper celts and axes are large, and we have only a single small copper implement, an awl, from Esmeraldas. We must not forget that to the present time hardly any archaeological work has been done in this section of South America. Our own explorations thus far have been little more than a preliminary reconnaissance of the region. Later, tools suitable for the fine dental work exhibited by these specimens may be uncovered by the spade of the investigator. I believe, however, that copper is too soft to have been used successfully for cutting so hard a substance as enamel, hence it is fairly evident

that other materials must have been employed as tools by the ancient dentists.

Regarding the other question, as to the ability of the patient to bear the discomfort and pain of the operation, is it not possible that these people had discovered the properties of coca in producing local anesthesia? We know from archaeological evidence, which I have brought out in my work on Manabi, that the people of the coast were addicted to the use of coca, chewing the leaves, mixed with lime, exactly as do the Indians of today in a large part of western South America. In view of these facts, it does not seem unreasonable to advance the hypothesis that coca may have been used in some form, in dental work in this area, where, without question, a little-known branch of South American Indians reached a high state of aboriginal culture.

Besides these cases just cited from Saville, there are many examples of early inlay work that are to be found in many of our museums. Though most of these appear on the outer surface of the tooth and might lead one to believe they might have been inserted for ornamental purposes, still there are those seen in the lower illustration in Figure 5 that show as many as three on the inner surface, which certainly could not have been seen, and almost gives us the answer of intention, namely, tooth preservation.

Since the preparation of this paper, further investigation as to the subject of ornamentation and mutilation of teeth has been made, and other important centers of culture and countries now become known.

It is only within recent months that we find a report of some of the more interesting "finds" and I have had placed at my disposal considerable material not yet reported or published.

Apparently these customs began with the inhabitants of Peru, traveled north to Ecuador, thence into Honduras and finally into Mexico. None have, so far, been discovered in this country.

J. Eric Thompson reports in the *Field Museum News* for March, 1932, that the Third Marshall Field Archeological Expedition to British Honduras, while excavating some Maya ruins in 1931, near San Jose, found some remarkable examples of aboriginal dentistry. "The most interesting is a set of teeth from the upper jaw of an ancient Maya, showing the four incisors and two canines inlaid with jade disks." The owner was in his early thirties at death, and died about 1000 years ago.

This specimen is unique, in that it not only has the ornamentation, but likewise, in combination, the mutilation of teeth, for their edges were filled to form a decorative pattern, as can be seen in Figure 5. This pattern takes the form of the Maya sun-god, Copan.

There is also reported a second upper jaw from the same ruins of San José. The teeth in this case have no inlay, but the incisors and canines have been filed to points, giving a serrated appearance.

Frans Blom, from the Department of Middle Research, Tulane University, of Louisiana, reports the finding of a Maya skull from the Uloa Valley, Republic of Honduras. It was that of a male about forty years old, with artificial deformation of the cranium, filed and inlaid teeth and with a jade bead imbedded on the palate just on the lingual surface of the upper right teeth. Apparently from the literature reported, artificial deformation of the human skull was an established custom among Maya people from South to North. The

Maya mother using wrappings to deform the head of her child in order to make him handsome, according to their standards.

From Landa we learn that "when dead they shrouded the corpse and filled the mouth with ground corn (maize) which is their food and drink that they call koyem and with it some stones of the kind they use for money, so that in the next life they should not be without food."

The jadite bead in the mouth of the skull reported was the first found in situ and now confirms Landa's earlier report.

The teeth in this skull reveal two outstanding features, a complete absence of caries (decay) and periodontal disease (pyorrhea).

Another interesting feature is that the ornamentation was of a unilateral character, for only the left upper central, lateral and cuspid are involved, and contain turquoise inlays. All the anterior teeth, both upper and lower, had been filed at an early age, as wear has somewhat obliterated the design.

In the National Museum of Mexico, considerable material relating to early dentistry in Mexico has been catalogued, but so far not reported. Through the courtesy of Drs. D. R. de la Borbolla and Alfonso Caso, I have been given photographs of the more interesting specimens. Some of these are of the Tarascan culture from Chupicuaro, Michoacan, and others from Monte Alban, Oaxaca.

The patterns of filing differ considerably from those previously reported and are of many new forms. So far only obsidian has been found to have been used for ornamentation. A unique specimen of Maya culture, found in Palenque, Chiapas, is that of a lower tooth with an obsidian inlay. This I believe to be the first found in the lowers; all others recorded are in the upper teeth.

All of the specimens at hand show considerable wear of the teeth, and there is no question that this procedure was undertaken early in the life of the various individuals.

Perhaps the most interesting specimens from the dental aspect are the two hollow cast gold teeth, of Zapotic culture, a part of a necklace found in a tomb at Ojittan, Oaxaca. These were cast, in gold, similar to the many gold objects found at Monte Alban, and carry the imitation of mutilation. This method of casting differs from that in Ancient Egypt or in other countries, and is apparently unique. As all of the hollow castings contained fragments of charcoal, this somewhat puzzled those in charge. In order to confirm my conclusion, I have since carved and cast the two specimens in question. First a charcoal core was carved to the size and shape of a human upper central and lateral and two pins inserted, at opposite points, so as to retain the charcoal firm in the core. A covering, the desired thickness of gold, of bee's wax and copal was then placed thereon. This was carved to the finished shape and size, which was in each case a trifle larger than the human tooth.

The wax was then covered with clay to form the outer core, first two holes being cut, one to allow the air to escape, while the pure gold was being poured in the other. The clay was then heated, so as to melt the wax, and gold poured into the intervening space.

Among the material found at Monte Alban are three black clay funerary urns, one representing the "God of

Maize," another the "God of Fire" and the third figurine, that of the "God of Rain." The teeth of one are so designed as to illustrate ornamentation, while on the other two are entirely different forms of mutilation.

At first it was presumed that ornamentation was practiced only among the "royal" class, but recent exploration in the common cemetery has likewise brought to light such practice; obsidian in this class being the stone so far found. Apparently jadeite and turquoise, etc., were too expensive for the ordinary individuals.

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ANCIENT THERAPY IN PERSIA AND IN ENGLAND

BEING EXTRACTS FROM "THERAPEUTICS OF JOSEPH," HERAT, 1511 A.D., AND FROM JOHN WESLEY'S "PRIMITIVE PHYSICK," LONDON, 1772

By H. A. LICHTWARDT, M.D.

MESHED, PERSIA

IT is interesting to note the spread of Arabian and Grecian medicine westward over Europe, and eastward to India and Persia, the same general principles of treatment often being observed, and often the same ingredients being used in the ancient prescriptions. It is surprising to see how few of the remedies of a few centuries ago are still in use today, and this makes one wonder how much of our present-day therapy will be considered worthless in a few generations.

"Joseph, son of Muhamad, son of Joseph the doctor" in his still-popular book of therapy, written in Herat in 1511 A.D. (917 A.H.) modestly admits the importance of prophylaxis and of research:

All medical science is to serve two ends,
With willing ears listen to Joseph, my friends;
Prophylaxis is the first and foremost of these,
The other is to remove the cause of disease.

John Wesley, whose book is written primarily for the layman, emphasizes medical treatment, but suggests that home therapy is better than that of doctors, who "fill their writings with abundance of technical terms, utterly unintelligible to plain men." In a century when fresh air was considered anathema, and water was merely something that ran under a bridge, he dared to advise much fresh air, frequent bathing, and the drinking of water rather than of the stronger refreshments which in those days were readily available. He writes:

> Water is the wholesomest of all drinks, quickens the appetite, and strengthens the digestion most. . . .
>
> They (the studious) should frequently shave—and frequently wash their feet.

At a time when exercise was considered proper for the laboring class only, and when clothes were worn in abundance to conceal and make ugly the human body, he had the courage to advise:

> The studious ought to have stated times for exercise, at least two or three hours a day; the one half of this before dinner, the other before going to bed. . . .
>
> The fewer clothes any one uses, by day or night the hardier he will be.

The old Persian doctor, Joseph, was, however, not as enthusiastic about cold baths as was the English clergyman, for he writes the following quatrain:

To bathe in cold water will give much distress
To five classes of people whom I now address;
Old folks and children and those who've caught cold,
Or those who've just eaten, or have diarrhea that's old.

Wesley evidently was one of the modern "hard" men, who gave the following directions (which he or his parents probably never followed): "Wise parents should dip their children in cold water every morning till they are three-quarters old, and afterwards their hands and feet."

Apoplexy is a condition which has been recognized for centuries, and for which Joseph logically recommends venesection:

When apoplexy causes a person to fall,
Consciousness and movement respond not to call;
If you note that the face and the eyes both are red,
Immediately open a vein of the head.

The British preacher advises practically the same treatment: "Fix a cupping glass without scarifying, to the nape of the neck, and another to each shoulder." Modern therapy, in certain conditions, might be distinctly improved by a little more, wise bloodletting, and less of injection of foreign substances into the bloodstream.

Lethargy can be cured, according to friend Wesley, by "snuffing strong vinegar up the nose" or "take a half pint of decoction of savary morning or evening." Joseph states:

Lethargy when it cometh is not a delusion,
Your health suffers much, and your mind's in confusion;
Of "Essence of Life" take one miscal each day,
Then this evil disease will be driven away.

(This "Essence of Life" is a popular "shot-gun" prescription, containing pistachio nuts, walnuts, raisins, honey, pepper, cinnamon, citron, fumitory, round birthwort, camomile and myrobalan.)

Though not troubled by the various problems of business depression, unemployment, tariff, the gold standard and other details which now keep one awake, yet even in the good old days they were troubled with *insomnia*, which Wesley calls "vigilia" and for which he prescribed: "Apply to the forehead for two hours, cloths four times doubled and dipt in cold water—or use a cold bath." He adds: "Assafoetida, from ten to thirty grains likewise will in most cases have as much effect as opium." Joseph, being a true Oriental, believes in the soporific juice of the poppy, though he disguises its odor with violets:

If you are awake during all the long night,
The use then of opium is considered all right;
Mix it with violet oil, and then it is said
This should be rubbed every night, on your head.

Insanity was not an unknown condition then, although we now probably have more varieties due to our more complex so-called civilization. The treatment that friend Joseph recommends is certainly most attractive:

If a person is really and truly insane
And all of his senses have gone on the wane;
For his eyes, let women of beauty be found,
For his ears, only harps and cymbals should sound.

John Wesley has several remedies some of which he states he has "tried" though he doesn't say whether he has tried them on himself or merely on his unsuspecting friends! "Give decoction of agrimony four times a day, or rub the head several times a day with vinegar in which ground-ivy leaves have been infused. Or "electrify."

Both men record many sure cures for *headaches*, which they divide into several classifications and degrees. Both recommend hot foot-baths (which even today we admit is very good therapy). Joseph suggests bleeding, while Wesley prescribes "juice of horse-radish" and advises "wearing tender hemlock leaves under the feet changing them daily." He also suggests "juice of the pimpernell into the ear" or "snuff up the nose, camphorated spirits of Lavender." Joseph versifies:

If a headache from bile causeth commotion,
Of sandal and coriander prepare a good lotion;
Make a sherbet of oranges, sour, not sweet,
And of barley-water, peas and pottage do eat.

To improve *dull sight*, Wesley advises a very simple remedy—"drop in two or three drops of juice of rotten apples." (This is probably an elaboraton of the theory that "an apple a day keeps the doctor away.") Throughout all of his writings, Joseph is very enthusiastic about salts, and he recommends:

If 'tis from much dampness that your vision
is poor,
Then take proper salts to commence on your
cure;
When the body and brain both of phlegm
are well clean,
Use antimony and all things will be seen.

For *cataract*, which Wesley calls "pearl in the eye," he suggests several things including sal-ammoniac in rose water, or juice of celandine, or rue or three-legged grass. When a Persian, even now, develops cataract, he states that the lens has become "water-of-pearl," and for this Joseph has an expensive medicine which is taken internally:

If a cataract in your eye has made a good
start,
'Tis an unfortunate burden upon your worn
heart;
But you must not worry or quickly grow
old,
For it soon can be cured with fresh "pills of
gold."

(These "pills of gold" were made of aloes, myrobalan, gum mastic, tragacanth, antimony, saffron, and red roses, all ground and sifted and made into pills.)

Lacrymal fistula is mentioned by both men, but the cure suggested by Joseph seems a rather dubious one:

When a swelling appears in the corner of
the eye,
The lacrymal sac's infected and it tends to
make one cry;
Oh you who are wise, just chew up some
peas,
And place them there-on, and you will find
ease.

Wesley's prescription seems more logical and more efficacious he mentions several forms of treatment: "Apply a poultice of fine leaves of rue, or wash the eye morning and evening with decoction of quince leaves, or take a dram of betony leaves, powdered, daily."

As befits a clergyman, Wesley writes little of *lues*, and says apologetically:

> Take an ounce of quicksilver every morning, and a spoonful of aqua sulphurata in a glass of water at five in the afternoon. I have known a person cured by this when supposed to be at the point of death, who had been infected by a foul nurse before he was a year old. I insert this for the sake of such innocent sufferers.

Joseph also recommends mercury, the sheet-anchor of twentieth century therapy:

When a dervish or shah of his lues com-
plains,
To remove all his sores, and to cure all his
pains,
Give either mercury powders or mercury
pills,
Or mercury vapors to relieve all these ills.

Leprosy is a disease which has interested both doctors and laymen through the ages, and though the ancient doctors knew little of its cause, they treated it valiantly but hopelessly. The Persian Joseph writes:

Should leprosy come to a man, small or great,
All wise men agree, 'tis a horrible fate;
Lest symptoms increase, do a venesection in time,
And give a decoction of dodder of thyme.

Wesleys suggests: "Use the cold bath or apply nettles bruised in a mortar, or drink celery-whey, or decoction of elm-bark, or burdock leaves."

Cancer was then, as now, a devastating disease which caused the physician much thought and worry, and for which he could do little. Wesley, the optimist, says it can be *cured* by "red poppy water, plantane and rose water, mixed with honey of roses." "Use the cold bath," he also recommends. He has some ten other sure cures including goose-dung, horses' warts, brimstone and sulphuric acid. Joseph, a philosophical Muhamadan, is more honest even if more pessimistic:

Should a person have cancer 'tis a cause for much sorrow,
They have trouble today and will have trouble tomorrow;
Of complete disappearance there is not much hope,
But an enema each day may retard its growth.

For *scrofula*, which he calls "the King's evil," Wesley prescribes cream of tartar, ground-ivy, nettles, or lime-water. Joseph, writing two centuries earlier, rightly recognizes the hereditary tendency of the disease, for he versifies:

If you, friend, by scrofula are affected and worn,
'Tis your fate, *pre-ordained, before you were born;*
Apply a poultice of marshmellow, pepper and pitch,
And thence onward, in health, you will surely be rich.

Smallpox, that pestilence of all ages till the time of Jenner, was treated chiefly by dieting, vegetarianism being advocated by both men. Joseph advises:

If smallpox does worry and trouble your soul,
Listen to me and let this be your goal.
Eat only of lentils and peas and all such,
Of jujube sherbet and rose-water drink much.

He adds: "near the time of the appearance of the pustules, the hands and feet should be bound with henna, and into the eyes should be put camphor and antimony, dissolved in coriander water, that no pustules appear in the eyes." Wesley writes: "Drink largely of toast and water, or eat milk and apples; take care to have free, pure and cool air."

Measles afflicted the children of the old days even as now, and Wesley gives the following suggestions: "Drink only thin barley-gruel, or milk and water; take frequently a spoonful of barley-water, sweetened with oil of sweet almonds, newly drawn, mixed with syrup of maidenhair." Joseph also suggests diet as well as bloodletting:

If a person with measles is seriously ill,
After three days give no acids or your patient you'll kill;
On the first day for an enema leave the direction,
And on the second, do a venesection.

Ringworm was annoying even if not fatal, and cleanliness is advocated by Joseph:

Whoever has ringworm be it shah or dervish,
Should go to the bath if a cure he does wish.
And as he is finished, even tho he is old,
He should thoroughly wash with water that's cold.

For local application for this condition, Wesley prescribes "rotten apples, or oil of paper, or juice of house-leek, or pounded garlick, or camphorated Hungary water" all of which are certainly disagreeable enough to be very effective.

Boils have been a recorded nuisance since the days of Job, and Wesley wisely recommended various sorts of poultices, including figs, honey, turpentine, etc. Joseph writes:

If like a bud, you've a boil, not yet open,
For relief of the pain you are praying and hoping;
A poultice of figs, raisins, and mustard apply,
'Twill drive out the pain, and silence your cry.

Scabies is always found wherever there is uncleanliness, and Dr. Joseph advises the following simple treatment:

The scabies appears at the end of the day,
A regular cathartic will drive it away;
If also an ointment you daily apply,
Of rose-water and vinegar and bean-flour dry.

The treatment which John Wesley approves is in some respects much like the present-day treatment. He writes:

> Wash the parts effected with strong rum, or strong decoction of burdock, or anoint them with black soap; or steep a shirt for one half hour in a quart of water mixed with a half ounce of powdered brimstone; dry it slowly and wear it five or six days. Sometimes it needs repeating. . . . Or, mix a little bay-salt with as much flower of brimstone, and with a little sweet oil; rub it in well in the palms of the hands and dry it on. It commonly cures in three days.

Herpes was treated by Wesley as follows: "Drink sea-water every morning for a week; towards the close bathe also, or apply pounded garlic." Joseph has a simpler treatment:

If herpes affects you and you wish to be free,
Just give me your ears and listen to me;
A poultice of mustard and vinegar apply,
And health will appear in response to your cry.

Burns undoubtedly appeared soon after primitive man first discovered the blessings of fire, and the ability to produce the same. Joseph advocates the following treatment:

First burn the feathers of a hen,
Then grind them up for medicine;
Apply to the burn for several days,
And 'twill be healed in the best of ways.

Wesley says: "Apply varnish with a feather, or apply oil and throw on it powdered sugar; or apply a bruised onion, or electrify it."

Thus we note that the Persian therapy of the sixteenth century was not much different from the European therapy of the eighteenth; whilst we, gloating in our modern knowledge, skill, and ability, will in a few generations probably be rated as ignorant and backward and ridiculous, in the light of the discoveries which will be made in the next century.

[From Schenckius: Observationum Medicarum, Francofurti, 1609.]

EDITORIAL

"MADDER" IN CHINA

IN the *chüan* or section concerning the economic wealth of the Western Han period (*ca.* two centuries B.C.) as told in its dynastic history[1] there is a passage descriptive of the princely holdings of "a thousand households." In this passage it is said of the cultivated fields surrounding the cities that there are "thousands[2] of 'acres'[3] of 'ch'ien' and 'chih' (for yellow and red dyes)."

The two Chinese characters are defined in Giles' "Dictionary" (Nos. 1762, 1859) as *gardenia florida* and *rubia cordifolia.* Descriptions of the two plants are given in "Chinese Materia Medica."[4] Several varieties of the two shrubs are entered in "Botanical Nomenclature" (A Complete Dictionary of Botanical Terms), published in 1928.[5]

In ANNALS OF MEDICAL HISTORY[6] there appeared an article entitled "The History of Madder (Rubia Tinctorum)," by G. R. Cameron, Beit Memorial Fellow, University College Hospital Medical School, London, England. In this article it is stated that there is "some evidence that the Chinese knew the value of the plant as a dye." Other than this one brief statement there is no reference to the extensive knowledge and use of the plant by the Chinese such as is implied in the historical passage quoted above, stating that in the two centuries B.C. it was cultivated by "thousands of acres" around the cities of the princely landowners. Perhaps this neglect of the place of the Chinese shrub in the history of the plant "madder" by Dr. Cameron is due to the limitation of the study to the variety called *rubia tinctorum.*

Yet Dr. Stuart (p. 382) in 1911 wrote of the Chinese variety:

> It is the Indian "madder" plant, and is very similar to the European "madder." It is a creeper, growing to a length of several feet, has a square, hollow stem, covered with small prickles. The leaves are in whorls of five, scabrous and dark on the upper side. The root is purplish-red. In the "Historical Records"[7] it is said that he who plants a thousand *mou* with this plant and the *Gardenia,* is considered to be equal in wealth to a nobleman who has control of a thousand households. This shows the importance in which these plants are held in the estimation of the Chinese. The root is used as a red dye not only in China, but also

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[1] "Han Shu," chap. 91, "Economics," A.D. 1739 ed., p. 7.

[2] A superlative use of an arithmetical term.

[3] A Chinese "acre" is equivalent to about one-sixth of an English one.

[4] Stuart, G. A. Vegetable Kingdom. Shanghai, 1911, pp. 183; 381.

[5] Commercial Press, Shanghai.

[6] N.s. 4: 466–473, 1932.

[7] *Shi Chi*, by Ssû-ma Ch'ien, *ca.* 2nd century B.C., chap. 129, 1739 ed., p. 14.

in Japan, and is called *munjette* or *mandjuchaka* in Sanscrit. Tonic, alterative, astringent, vulnerary, and emmenagogue properties[8] are ascribed to the root, and it is used in rheumatism, jaundice, hemorrhages, fractures, and all sorts of exhausting discharges.

The chief source for Dr. Stuart's work was the great "Chinese Materia Medica," the "Pên ts'ao."[9] This compilation of the sixteenth century is based upon some eight hundred preceding works, from which the author selected some fifteen hundred different medicaments, and to these added more than 370 new ones. In his division called *ts'ao*, "herbs"[10] he entered "ch'ien."

In "Botanical Nomenclature,"[5] the entries for the shrub are under four main western classifications: *Rubia* (p. 803, three varieties); *Rubia cordifolia var.; Mungista* (p. 802); *Rubia tinctoria* (p. 422); and *Rubia chinensis* (p. 51, to which a special term, *ta chên*, is applied for the latter variety). The third of these classifications, *rubia tinctoria*, is called in Chinese "Western" *ch'ien*, and is said to be of Arabian origin. The varieties under the other classifications apparently are of Chinese origin so far as the compilers of this work knew.

It would be an interesting, but perhaps difficult task to trace the history of "madder" in China, not only since the time of its production on "thousands of acres" in the third and second centuries B.C., but also prior to that time. Without doubt the literary as well as the authentic historical writings of the Chinese would furnish a reference here and there, out of which part of the early history might also be compiled. It may be possible that such a study has already been made, and upon it Dr. Cameron based his one reference to the part China has played in the knowledge and use of the plant "madder."

NANCY LEE SWANN.

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[8] Of madder, according to Dr. Cameron (p. 471), the third edition of Murray's "Materia Medica," 1816, states that "its inefficiency is generally acknowledged."

[9] See Wylie, A. Notes on Chinese Literature, repr. 1922, Shanghai, p. 100.

[10] Chap. 18b, 1885–87 ed., pp. 19–22.

BOOK REVIEWS

Medicine in Virginia in the Nineteenth Century. By Wyndham B. Blanton, m.d. Richmond, Garrett and Massie, Inc., 1933.

This large book is the third and final volume of the series covering the history of medicine in Virginia from 1607 to 1900, published under the supervision of a committee of the Medical Society of Virginia, composed of Drs. Wyndham B. Blanton, Beverley R. Tucker and Frederick C. Rinker. These gentlemen are to be heartily congratulated on the most successful manner in which they have accomplished their difficult task. The previous volumes have already been reviewed in these columns and this volume fully maintains the high standard set by its predecessors. Every topic of interest in the medical history of the State receives adequate treatment. Although efforts were made in the eighteenth century to establish a medical school at William and Mary College, they proved abortive. Winchester Medical College which was founded in 1825 by two very able men, John Esten Cooke and Hugh Holmes Maguire, only survived a few years, possibly because at about the same time Thomas Jefferson organized the Medical Department of the University of Virginia, which is, therefore, the oldest medical school in the State. It will be recalled that Jefferson imported Robley Dunglison from England to fill the first professorship, and that it was in this capacity that he began his career as one of the most famous teachers of medicine in the United States.

An interesting episode in the history of Winchester Medical College occurred in connection with John Brown's raid. A number of students had gone to Harper's Ferry to see the excitement. They picked up a dead man's body on the bank of the Shenandoah, and brought it back to the dissecting room. There they found from papers and clothes on it that it was the corpse of John Brown's son Owen. A dried preparation was made of the body and it was placed among the other specimens. When the Federal troops under General Banks entered Winchester in 1862, the General upon learning that Owen Brown's body was being used at the College for teaching purposes, had it removed and sent north, and then destroyed the College buildings by fire. The earliest medical society in Virginia was the Medical Society of Virginia which was organized in 1820. The history of this and subsequently founded medical societies is well told. One of the most interesting parts of Dr. Blanton's book is that devoted to "Confederate States Medicine." The history of the medical service of the Confederate Army has never been adequately described and this is a valuable contribution to it.

There are many appropriate illustrations and an excellent index. The three volumes of "Medicine in Virginia" constitute a model of the way in which such works should be produced.

De Venarum Ostiolis; 1603, of Hieronymus Fabricius of Aquapendente (1533?–1619). Facsimile Edition with Introductions, Translation, and Notes, by K. J. Franklin, d.m. Springfield, Ill., Charles C. Thomas, 1933.

On the occasion of the Tercentenary of the publication of Harvey's great work "*De Motu Cordis*" in 1928 the book was reproduced in facsimile and much interest reawakened in the entire subject of the development of the correct knowledge of the circulation. Although the work of

Fabricius on the valves in the veins was thus again brought to the fore his original description of these structures was difficult of access and had never been translated into English. The present volume gives us the original Latin text with reproductions of the plates accompanying it, and an excellent English translation. The text is preceded by a brief though adequate biography of Fabricius, a bibliographical account of the first edition of the "De Venarum Ostiolis," and an excellent resumé of the early history of the work on the valves in the veins. This disposes very clearly of the vague claims to their observation made for some of the Ancients, such as Erasistratus. In the sixteenth century, as is so well shown by Streeter in the preface to his facsimile reprint of Canano, the latter saw the valves and described them to Vesalius, but unfortunately did not publish his observations, and Charles Estienne, Jacobus Sylvius and Paolo Sarpi also refer, though somewhat vaguely, to valves in various parts of the venous system. It remained, however, to Fabricius to clearly and accurately describe their structure and their function to prevent the back flow of the blood.

The importance of Fabricius' work can not be overestimated. It has, hitherto, been inaccessible to the greatest number of students of medical history and Dr. Franklin has laid that increasingly large number of scholars under his debt by the excellent way in which he has carried out his difficult task. The beautiful volume in which it is published adds greatly to its charm. One feature of the book is the fine reproduction of the original illustrations, and also the account of the anatomical theater built for Fabricius in Padua, with architectural drawings and pictures which give a much clearer understanding of its nature and construction than we have ever seen before. There is also an excellent index and bibliography.

ADDENDA TO A BIBLIOGRAPHY OF THE HONOURABLE ROBERT BOYLE. By J. F. Fulton, M.D. Reprinted from the Oxford Bibliographical Society Proceedings and Papers. Vol. III, pt. 3, pp. 339–365.

Professor Fulton's monumental "Bibliography of Robert Boyle" was reviewed in these pages* a short time ago and its great value has been duly appreciated throughout the scientific world. The "Addenda" serves chiefly to illustrate how thoroughly the previous work covered the subject, the new items being of comparatively minor importance, such as the advertisement of the sale of Boyle's books, a second edition of "The Saltiness of the Sea," not previously described, a few variant editions, and some additions to the biography and criticism of Boyle, including some noteworthy dedications of books to him. Dr. Fulton states that copies of these "Addenda," printed on one side of the page, will be available for private distribution to members of the Oxford Bibliographical Society and to others who have received a reprint of the original "Bibliography."

SOCIETY AND THE NATURAL LAW. A plea for the study of Biological Adaptations as an inspiration for Social Mechanics. By Henry Sewall, PH.D., M.D., SC.D. Boston, Richard G. Badger, 1933.

It is greatly to be wished that this little book would be read with intelligent comprehension by the many who are now pushing forward their various plans for the betterment of the world's condition. Dr. Sewall proposes "that every economist, financier, politician or dealer of whatever sort in human affairs shall take lessons as a research-scholar from the book of nature," because "a study of biological laws is likely to reveal a replica of social problems experimentally solved for him, as it were, and competent to illuminate the data of community life." No one can deny that Dr. Sewall proves his point but there is, unfortunately, just as little doubt that the book will be read by very few of those whom it might most benefit. In his usual clear and delightful manner the Author illustrates by examples taken from biology and physiology the way in which nature provides for proper correlation of the activities of the various organs and tissues of the body, his last examples being drawn from the activities of the hormones of the ductless glands, and the cerebrospinal and autonomic nervous systems. Dr. Sewall modestly states that there is nothing new in the analogy between the equilibrium of the multicellular animal organism and the polity regulating human relationships, that it interested Aristotle profoundly, but the recent developments in biological science having given the conception much new meaning, and it is this significance which Dr. Sewall especially points out. The book is timely and it is hoped may bear fruit.

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* ANN. MED. HIST. n.s. 1: 101, 1929.

CHINESE MEDICINE. By William R. Morse, M.D., Dean of Medical School, Head of Department of Anatomy and Associate in Surgery, West China Union University, College of Medicine and Dentistry, Chengtu, Szechwan Province, West China. With 16 illus. Clio Medica XI. N. Y., Paul B. Hoeber, Inc., 1934.

This concisely written but comprehensive little book is an informative guide to a most obscure subject. Chapter I is a very lucid explanation of the complexities of Chinese natural philosophy or cosmology, on which the principles and practice of Chinese medicine have been based for over three thousand years, and of which one of the most important features is the famous theory of the Yang and the Yin principles, the two antagonistic forces, which exist in every animate and inanimate substance, and whose harmony or discord is productive of all the good and evil, health or disease, happiness or sorrow, to which earthly inhabitants are subject. This cosmic soul, Yang or Yin, "permeates all things but in different proportions. . . . The former are life giving, and the latter life destroying substances." This theory bears a somewhat vague resemblance to the humoral philosophy of the Greeks, and there is another numerical theory which obscurely recalls the numerical fantasies of Pythagoras. The number five plays a conspicuous part in Chinese natural philosophy. There are five elements: mineral, wood, water, fire and earth. "To each element there correspond five colors, five musical notes, five ranks and five qualities. There are also five minerals, five grains, five fruits, five sacrificial animals, five guardian mountains, five virtues, five degrees of mourning, five blessings, five shapes, five smells, five senses, etc. . . . Each element has a parent, child, enemy and friend element corresponding to it. For example, water has metal for a parent, wood for a child, earth for an enemy, and fire for a friend." All of these circumstances together with the astronomical relations of the sun, moon, constellations, planets and signs of the zodiac, besides the observation of the seventy and upwards varieties of the pulse have to be considered by the Chinese physician when diagnosing an illness or prescribing for its relief. Astrology, magic and superstition play an enormous part in Chinese medicine, both Taoism and Buddhism contributing largely to these factors. Dr. Morse devotes a chapter to the Chinese gods of medicine, with interesting portraits of six of these worthies. Chinese medical literature though vast is chiefly of interest because of its ancientry, rather than for any really scientific contributions. Though Dr. Morse charitably says that "it is not all the truth to say that Chinese anatomy is a pure phantasmagoria," yet the reader of his chapter on the subject finds it pretty hard to find any evidence of a real knowledge of the subject. Dissection was not practiced, all observations being made on the bodies of prisoners who had been executed by cutting to pieces or bodies which had been mutilated by dogs. Nevertheless, there was a surgeon Hua T'o who lived some time in the fifth or sixth century A.D. who is said to have given a drug to patients which rendered them unconscious, and then performed abdominal sections, including removal of part of the spleen. The famous pulse lore of the Chinese is fully dealt with in Chapter VII. It is too complicated a subject to attempt reviewing in our limited space. Acupuncture and the moxa were two of the therapeutic procedures most in vogue in China. The fantastic character of Chinese anatomy is well illustrated by the fact that acupuncture was performed at various points along "hypothetical, invisible, undissectable channels," which were supposed to contain the vital Yang and Yin. Dr. Morse reproduces some of the elaborate charts illustrating points suitable for puncturing these imaginary channels. He gives a most interesting description of the procedure as he witnessed its performance in a market place on a number of patients by a Chinese operator.

Dr. Morse has passed many years in China and has an intimate acquaintance with all phases of Chinese medical practice, as well as a profound knowledge of classical Chinese medical literature. His book is not only an authoritative text but a most interesting description of certain phases of Chinese life.

THE RENAISSANCE OF MEDICINE IN ITALY. By Arturo Castiglioni, M.D., Professor of the History of Medicine at the University of Padua. The Hideyo Noguchi Lectures. Publications of the Institute of the History of Medicine of the Johns Hopkins University. S. 3, Vol. I. Balt., Johns Hopkins Press, 1934.

Although Professor Sigerist has written a delightful preface to Castiglioni's book in which he introduces the author to his American readers, it was hardly necessary, as even before his recent lecture tour in this country Castiglioni was known to us all as the author of one of the best medical histories and of many other notable contributions to the subject. In the present volume he gives us a delightful resumé of the relation borne by medicine to the cultural aspects of the period under consideration. Occupying, himself, a chair in the University of Padua, "fair nursery of arts," the institution in which was centered so many of the most powerful factors in the great rebirth of science, no one could be so well qualified to deal with this great subject as Castiglioni. He deals sparingly but sufficiently with biographical or personal details of the great figures such as Leonardo da Vinci, Berengaria da Carpi, Vesalius and Fabricius, but he presents the developments of medical science which arose largely as a result of their labors and shows its association with the other cultural developments of the Renaissance, which he defines as a return to the "classic, aesthetic and historic conception of beauty and glory, the ground for which had been prepared by the Humanists of the Fifteenth Century," its chief characteristics being a boundless thirst for knowledge, a great development of individualism, as shown in the outcrop of autobiographies and biographies, and the aesthetic studies of the individual made by the great painters and poets, and the rise of new national and political conceptions. Lack of space prevents further analysis of Castiglioni's method of presentation of his subject but sufficient has been said to indicate its value as a philosophic study of a great epoch. It deserves reading and rereading.

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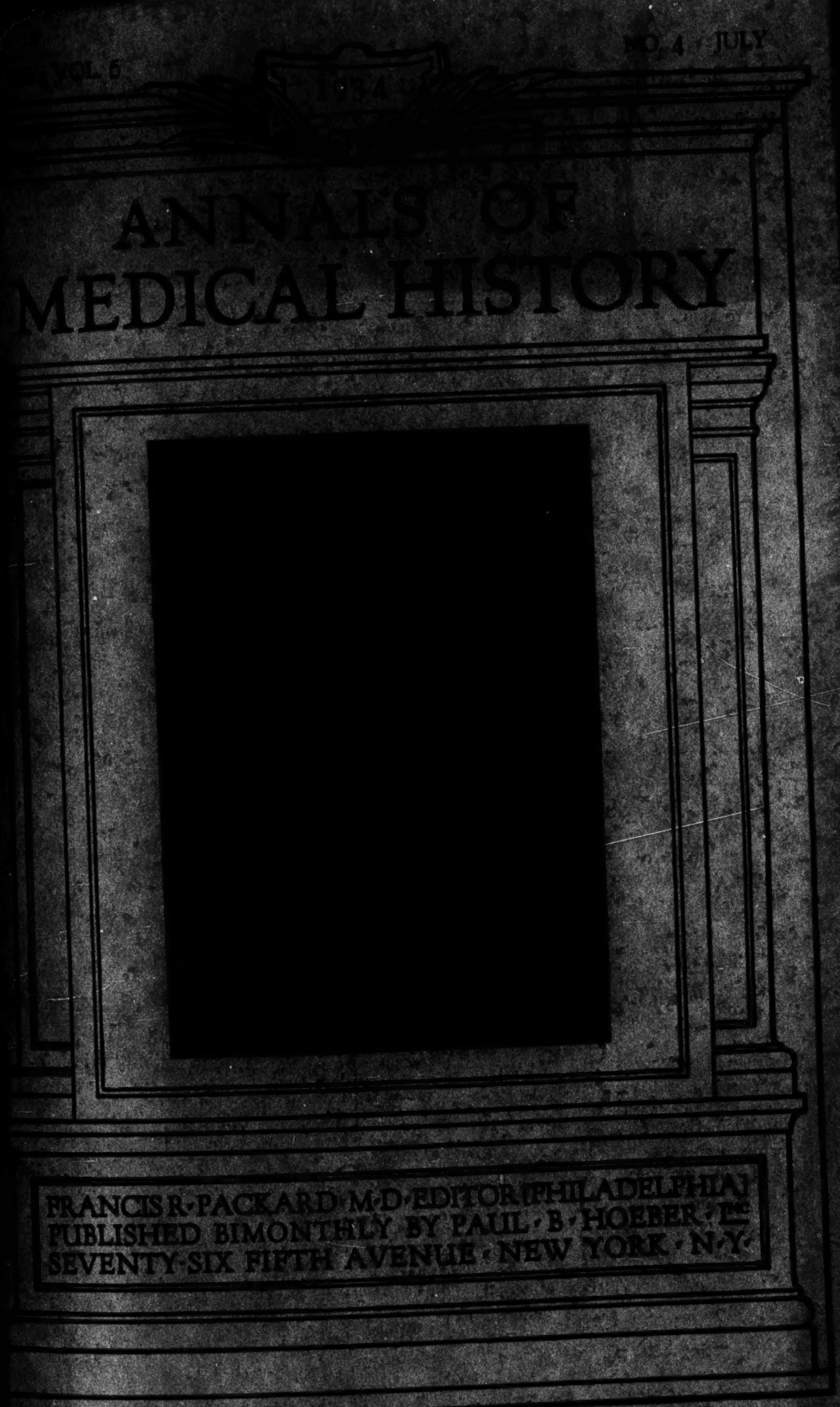

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